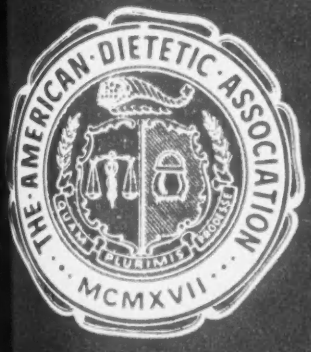
APRIL 1955

VOLUME 31 | NUMBER 4

Journal OF THE AMERICAN DIETETIC ASSOCIATION

PUBLISHED BY THE AMERICAN DIETETIC ASSOCIATION



Nutritionists, Attitudes toward Additives — *L. A. Maynard*

The Calcium Controversy — *Margaret A. Ohlson*

Diet Therapy in the Celiac Syndrome — *Dorothy H. Andersen and Emma M. Mike*

"Simple Obesity" — *George H. Berryman*

Boys' Response to Different Breakfasts — *Kate Daum et al.*

Consultation Service for a Small Hospital — *Alice H. Smith*

The Shared Dietitian — *Betty Hoover*

Serving the Aged — *Sophia Heend*

Training Programs for Supervisors — *Isola D. Robinson*

Checking Menus Is Not the Answer — *Marjorie M. Heseltine*

39th A.D.A.
Annual Meeting
St. Louis
October 18–21, 1955

mfb

heavy-duty

the shortening with the high smoke point

A pure all-hydrogenated vegetable shortening made by

THE WESSON OIL PEOPLE New Orleans, La.

VOLUME 31
NUMBER 4

Journal OF THE American Dietetic Association

CONTENTS, APRIL 1955

How Should the Nutritionist Regard Additives?—*L. A. Maynard*, Ph.D., Sc.D. 329

The Calcium Controversy—*Margaret A. Ohlson*, Ph.D. 333

Diet Therapy in the Celiac Syndrome—*Dorothy H. Andersen*, M.D., *and Emma M. Mike*. 346

"Simple" Obesity: A Current Review—*George H. Berryman*, M.D. 347

Physiologic Response of Boys 12 to 14 Years Old to Different Breakfasts—*Kate Daum*, Ph.D., *W. W. Tuttle*, Ph.D., *Rosemary Larsen, Loise Roloff, and John Salzano*. . 359

Consultation Service in a Home for the Aged—*Alice H. Smith* 363

Current Comment

The Shared Dietitian—*Betty Hoover* 370

Serving the Aged—*Sophia Heend* 376

Developing Training Programs for the Food Service Supervisor—*Isola D. Robinson* 380

Checking Menus Is Not the Answer—*Marjorie M. Heseltine* 384

Book Reviews 390

Current Literature 392

News Notes 422

The Journal of the American Dietetic Association is published monthly by The American Dietetic Association, Mt. Royal & Guilford Aves., Baltimore 2, Md., and 620 N. Michigan Ave., Chicago 11, Ill. Neither the Association nor the Editor assumes responsibility for the opinions expressed by authors of papers abstracted, quoted, or published in full in this Journal.

Subscription Rates: $6 per year in advance in the U. S., Canada, and countries of the Postal Union; all other countries, $7 per year in advance. Special rate to undergraduate students and dietetic interns in approved internships, $2 per year in advance, if order is approved by head of the department. Single copies 75 cents in advance. All correspondence concerning Journal subscriptions, orders for copies or reprints from the Journal, and notices of change of address should be sent to The American Dietetic Association, Mt. Royal & Guilford Aves., Baltimore 2, Md., or preferably 620 N. Michigan Ave., Chicago 11, Ill. Notices regarding change of address should reach the publisher by the *23rd of the month before the date of issue* on which the change is to take effect and both old and new addresses must be given. Claims for Journals lost in the mail will not be entertained more than six months after the date of the issue involved.

Editorial Correspondence: All articles and notices for publication, general correspondence, and inquiries should be sent to the Editor at The American Dietetic Association, 620 N. Michigan Ave., Chicago 11, Ill. Manuscripts are accepted for publication on condition that they are contributed solely to the Journal. Copy must be double-spaced and two copies, an original and one carbon, submitted.

Advertising: All correspondence concerning advertising should be addressed to The American Dietetic Association, 620 N. Michigan Ave., Chicago 11, Ill.

Copyright, 1955, by The American Dietetic Association Printed in U.S.A.

Entered as second-class matter June 30, 1925 at the Post Office at Baltimore, Md. under the act of August 24, 1912.

Published monthly by The American Dietetic Association

OFFICERS, 1954-1955, THE AMERICAN DIETETIC ASSOCIATION

Headquarters of the Association: 620 N. Michigan Ave., Chicago 11

Coordinating Cabinet

EXECUTIVE BOARD

President, FERN W. GLEISER, University of Chicago
President-Elect, WINIFRED H. ERICKSON, Ancker Hospital, St. Paul
Speaker of the House of Delegates, MARY REEVES, Children's Bureau, Department of Health, Education and Welfare, Chicago
Secretary and Chairman, Membership Committee, MARY ELLEN JOHNSON, Colorado State Hospital, Pueblo
Treasurer and Chairman, Finance Committee, DORIS T. ODLE, Univ. of Colorado Department of Medicine, Denver

SECTION CHAIRMEN

Community Nutrition, GERALDINE M. PIPER, Univ. of Tennessee, Knoxville
Diet Therapy, DORIS JOHNSON, Ph.D., Grace-New Haven Community Hospital, New Haven 4, Conn.
Food Administration, BEATRICE DONALDSON, Ph.D., Univ. of Wisconsin, Madison
Professional Education, MRS. MARTHA NELSON LEWIS, The Ohio State University, Columbus

COUNCIL OF THE HOUSE OF DELEGATES

Speaker, MARY REEVES, Children's Bureau, Department of Health, Education and Welfare, Chicago
Speaker-Elect, MARGUERITE L. PETTEE, Univ. of Colorado Medical School, Denver
Delegates of the House of Delegates
ADELIA M. BEEUWKES, Univ. of Michigan, Ann Arbor 1955
JANE HARTMAN, Maryland Dept. of Health, Baltimore 1955
BERTHA J. BILTZ, St. Luke's Hospital, Cleveland 1956
MRS. MAY S. REYNOLDS, Univ. of Wisconsin 1956
Senior Delegates-at-Large
LILLIAN S. COOVER, Ph.D., 2121 Hughes Ave., Ames, Iowa 1955
MANIZA MOORE, *Secretary*, Veterans Administration, Atlanta, Georgia 1955

DELEGATES-AT-LARGE

MILDRED BONNELL, Univ. of Washington, Seattle 1956
MARGARET A. OHLSON, Ph.D., Michigan State College, East Lansing 1956
ERCEL S. EPPRIGHT, Ph.D., Iowa State College, Ames 1957
HELEN A. HUNSCHER, Ph.D., Western Reserve University, Cleveland 1957

Headquarters Staff

RUTH M. YAKEL, Executive Secretary
DOROTHY J. BATES, Assistant to Educational Director
MILDRED L. EGEBERG, Advertising and Exhibition Director
MRS. DOROTHY WEBER INYARD, Membership and Credentials Director
MRS. THELMA POLLEN, Public Relations Director
WILMA F. ROBINSON, Educational Director
J. HART ROSDAIL, Business Manager
MRS. DOROTHEA F. TURNER, Editor, JOURNAL
HARRIET E. SANKEY, Managing Editor, JOURNAL
CLARA ZEMPEL, Professional Activities Director

ADVISORY BOARD

CHARLES GLEN KING, Sc.D., Ph.D., *Chairman*, The Nutrition Foundation Inc., New York City 1955
FREDRICK J. STARE, M.D., Ph.D., Harvard School of Public Health, Boston 1956
GEORGE BUGBEE, Health Information Foundation, New York City 1957

AWARDS, SCHOLARSHIP AND LOAN FUND BOARD

EVA G. WILSON, Ph.D., Pennsylvania State Univ., State College 1955

DIETETIC INTERNSHIP BOARD

MRS. CORINNE H. ROBINSON, 90 E. Stewart Ave., Lansdowne, Pa. 1955

JOURNAL BOARD

MARTHA F. TRULSON, D.Sc., *Chairman*, Harvard School of Public Health, Boston 1955
MILDRED BONNELL, Univ. of Washington, Seattle 1955
MRS. BESSIE BROOKS WEST, Kansas State College, Manhattan 1955
MRS. ELIZABETH CASO, Diabetes Section, Public Health Service, Department of Health, Education and Welfare 1956
MARGARET A. OHLSON, Ph.D., Michigan State College, East Lansing 1956
MRS. CORINNE H. ROBINSON, 90 E. Stewart Ave., Lansdowne, Pa. 1956
JANE M. LEICHSENRING, Ph.D., Univ. of Minnesota, St. Paul 1957
ROSEMARY L. LODDE, Veterans Administration, Washington, D. C. 1957

INVESTIGATION BOARD

LOUISE ESCH, Stanford Univ. Hospitals, San Francisco 1955

COMMITTEE CHAIRMEN

Annual Meeting, HELEN MCLACHLAN, St. Louis Univ. Hospitals, St. Louis; KATE DALY, Scruggs-Vandervoort, Barney, St. Louis
Civil Defense, DOROTHY L. BOVEE, American National Red Cross, Washington, D. C.
Educational Exhibits, MARTHA J. MOFFIT, VA Hospital, Hines, Ill.
History of A.D.A., MRS. ANNA BOLLER BEACH, The Presbyterian Hospital, Chicago
History of Nutrition and Dietetics, E. NEIGE TODHUNTER, Ph.D., Univ. of Alabama, University
Library, ELIZABETH H. TUFT, Wesley Memorial Hospital, Chicago
Nominating, LOUISE HATCH, Massachusetts General Hospital, Boston 14
Program Planning, LEVELLE WOOD, The Ohio State Univ., Columbus 10; MARTHA J. MOFFIT, VA Hospital, Hines, Ill.
Public Relations, MRS. HELEN L. HARPER, 2556 Lakeland Dr., Nashville 10, Tenn.
Vocational Guidance, GERTRUDE MILLER, VA Center, Los Angeles 25

PRESIDENTS OF STATE DIETETIC ASSOCIATIONS AFFILIATED WITH THE AMERICAN DIETETIC ASSOCIATION

ALABAMA: Florence H. Lutz, 26 Cherokee Hills, Tuscaloosa
ARIZONA: Dorothy Taylor, Box 8356 Greenway Station, VA Hospital, Tucson
ARKANSAS: Mrs. Barbara S. McDonald, State Dept. of Health, Little Rock
CALIFORNIA: Mrs. Marjorie N. Petersen, VA Center, Los Angeles 25
COLORADO: Marguerite L. Pettee, Univ. of Colorado Medical School, Denver 20
CONNECTICUT: Doris Johnson, Ph.D., Grace-New Haven Community Hospital, New Haven 4
DELAWARE: Mrs. Hazel S. Morris, 26 E. Main St., % Elliott House, Newark
DISTRICT OF COLUMBIA: Edith A. Jones, Clinical Center, U. S. Public Health Service, Bethesda, Md.
FLORIDA: Alice L. Cromartie, 326 E. Pershing St., Tallahassee
GEORGIA: Marjorie E. Massee, 1055 Clifton Rd., N.E., Atlanta
IDAHO: Mrs. Ethel Helm, 397 Randolph Ave., Pocatello
ILLINOIS: Josephine Schildberg, The Presbyterian Hospital, Chicago
INDIANA: Dr. Cecilia Schuck, Purdue Univ., Lafayette
IOWA: Mrs. Shirley N. Beckett, 431 S. Governor, Iowa City
KANSAS: Mary J. Carter, Watkins Memorial Hospital, Univ. of Kansas, Lawrence
KENTUCKY: Mrs. Elizabeth T. Banes, 32 S. Sheridan Rd., Louisville 5
LOUISIANA: Mrs. Florine C. Allen, 5737 Louis XIV St., New Orleans 24
MAINE: Dorothy L. Woodcock, Dept. of Health and Welfare, Augusta
MARYLAND: Ethel M. Miller, Johns Hopkins Hospital, Baltimore 5
MASSACHUSETTS: Grace M. Covey, 16 Ware St., Cambridge
MICHIGAN: Dena C. Cederquist, Ph.D., Michigan State College, East Lansing
MINNESOTA: Mrs. Margaret S. Kienzle, Glen Lake Sanatorium, Oak Terrace
MISSISSIPPI: Mrs. Lucille S. Ryan, 226 Redwood Ave., Jackson 9
MISSOURI: Elizabeth McCorkle, Scruggs-Vandervoort-Barney, St. Louis
MONTANA: Jean E. Schellenberger, VA Center, Ft. Harrison
NEBRASKA: Dorothea M. Edwards, VA Hospital, Omaha
NEVADA: Coy A. Threlfall, VA Center, Reno
NEW HAMPSHIRE: Ellen M. Matson, New Ipswich
NEW JERSEY: Elaine L. Loseke, Paterson General Hospital, Paterson 3
NEW MEXICO: Georgene Barte, Univ. of New Mexico, Albuquerque
NEW YORK: A. June Bricker, Metropolitan Life Insurance Co., New York City 10
NORTH CAROLINA: Mrs. Mary B. Deaver, State Board of Health, Raleigh
NORTH DAKOTA: Mrs. Elizabeth D. Karges, VA Hospital, Fargo
OHIO: Helen A. Hunscher, Ph.D., Western Reserve Univ., Cleveland 6
OKLAHOMA: Alma E. White, Oklahoma A. & M. College, Stillwater
OREGON: Dorothy B. Steen, Emanuel Hospital, Portland 12
PENNSYLVANIA: Melva B. Bakkie, Carnegie Institute of Technology, Pittsburgh 13, Pa.
RHODE ISLAND: Mrs. Doris E. Lewis, Butler Hospital, Providence 6
SOUTH CAROLINA: Mrs. Helen S. Nygard, D-4 Heathwood Court Apts., Columbia
SOUTH DAKOTA: Sister Mary Alma, St. Joseph's Hospital, Mitchell
TENNESSEE: Edith E. Shipe, East Tennessee Baptist Hospital, Knoxville
TEXAS: Mary E. Dambold, Baylor Univ. Hospital, Dallas 4
UTAH: Margaret M. Parker, 110 S. 9th E., Salt Lake City
VERMONT: Helen I. Brown, 3 Elsom Pkwy., S. Burlington
VIRGINIA: Julia P. Van Horn, Univ. of Virginia Hospital, Charlottesville
WASHINGTON: Mrs. Dorothea E. Nicholson, 5034—48th Ave., N. E., Seattle 22
WEST VIRGINIA: Mrs. Rachel H. Ferguson, State Dept. of Health, Charleston
WISCONSIN: Martha E. Study, District Health Office, Fond du Lac
WYOMING: Dorothea A. Sander, State Board of Charities & Reform, Cheyenne
HAWAII: Ruth M. Rummel, Leahi Hospital, Honolulu 3

How Should the Nutritionist Regard Additives?[1]

L. A. MAYNARD, Ph.D., Sc.D.

Professor of Biochemistry and Nutrition, School of Nutrition, Cornell University, Ithaca, New York

TODAY there are more and more proposals for the fortification of staple foods with specific nutrients. The number and complexity of the vitamin mixtures being offered as supplements to the daily diet are also increasing, and various minerals—and even certain amino acids or concentrated sources of them—are being included in such products. All of these developments are being promoted on the basis that they contribute to better nutrition and health. The improvement of nutritional well-being is the major objective of the nutritional scientist and, thus, his attitude with respect to these developments is important. It is also a question with so many ramifications that any general or categorical answer is inadequate. There are many issues involved.

Current discoveries which are adding to the list of compounds known to be required by the body for its metabolism and new information on the roles played by previously recognized essentials have greatly increased the dimensions of the problem of making recommendations for an adequate diet. Information on the distribution of these essentials in our food supply and customary diets has not kept pace with the findings as to their physiologic need. In the meantime, the chemical industry, which has played an important role in the physiologic discoveries, has also made great strides in making these new essentials available as additions to specific foods and as separate supplements to the diet. It is natural that these additions should be promoted by these industries and by food manufacturers who visualize a larger market for their products by fortifying them with one or more of these essentials. Without disparaging the contributions which the chemical industry and food manufacturers are making to better nutrition, it is clearly the responsibility of the nutritional scientist to consider how far these developments should proceed in the interest of better nutrition and health. Sound decisions which take account of all the factors involved should be welcomed by both the chemical and food industries interested in their long-term market.

ADDITIVES TO FOODS

You are aware that additions of specific nutrients to specific foods have received the endorsement of the Food and Nutrition Board and the Council on Foods and Nutrition of the American Medical Association. These bodies have recently reviewed the basis on which these additions were originally approved and have jointly set forth policies which should govern the consideration of proposals for further additions (1). Their statement endorses "with carefully defined limitations the principle of the addition of specific nutrients to certain staple foods for the purpose of maintaining good nutrition as well as correcting deficiencies in the general population or significant segments of the population." The requirements for endorsement of such an addition are: (a) clear indication of a probable advantage of an increased consumption of the nutrient in question, (b) assurance that the food concerned would be an effective vehicle of distribution to those needing it, and (c) evidence that such an addition would not be prejudicial to a good diet in other respects.

The statement emphasizes the desirability of meeting nutritional needs by the use of natural foods insofar as practicable. It favors the principle of restoration—that is, additions to the natural levels in foods which have lost nutrients in refining, instead of the addition of higher-than-natural levels to other foods. It recognizes, however, that there may be cases where the latter is needed. The statement closes with a list of the restorations or fortifications endorsed to date. It is not intended, according to the statement, to close the door to further fortifications as the facts may merit. Reference is made to possible further needs as a result of economic or technologic developments which may lead to a significant re-

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 26, 1954.

TABLE 1

1953 per capita edible nutrient supply at retail level compared with per capita Recommended Dietary Allowances (2)

CALCULATION	CALORIES	PROTEIN	CALCIUM	IRON	VITAMIN A	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID
		gm.	*gm.*	*mg.*	*I.U.*	*mg.*	*mg.*	*mg.*	*mg.*
Retail supply	3210	95	1.00	17.0	7900	1.85	2.34	19.9	116
Recommended allowance	2580	64	1.06	11.6	4500	1.24	1.62	12.4	70
Surplus (%)	24	50	0	40	73	43	44	60	64

duction in the intake of an essential nutrient from staple foods. While this statement has no official standing from the standpoint of controlling the manufacture or marketing of fortified foods, it does provide a basis for an attitude toward further fortification.

The yearly compilations of the Department of Agriculture, as summarized in Table 1, show that, compared with the liberal allowances recommended by the Food and Nutrition Board, we have available large surpluses of the nutrients, except calcium. This would suggest that no additions are needed. However, many families and individuals fall so far short of consuming the recommended allowance of one or more nutrients as to indicate that malnutrition exists, despite ample supplies. Such a conclusion is supported by medical evidence, but it does not justify the conclusion that malnutrition in this country is serious or widespread. Thus the problem is largely one of improving the food habits of those specific groups and individuals which are now improperly fed.

It seems appropriate, therefore, to consider the role that further additions of nutrients to specific foods and diets might play in meeting actual needs. Here, one should know what segments of the population are primarily represented, since the nutritional justification for any further fortification of our food supply should rest on evidence that it would be effective in correcting the limited cases of deficiency and imbalance which actually exist, recognizing that no benefit could be expected for the general population. The fact that deficiencies occur primarily among low-income groups raises the question as to whether increasing the cost of a given food by fortification might not actually lessen its consumption.

Surveys indicate that low-income groups also have less knowledge of nutrition and their deficiencies are partly chargeable to ignorance or indifference about the importance of a good diet. This is an important cause of poor dietary practices at all levels and serves to emphasize the fact that, in this country where nutrients are in surplus supply and where knowledge can help greatly in obtaining a low-cost adequate diet, the most important step in correcting existing deficiencies is education. Nevertheless, this is a slow process, particularly where long established food habits are involved. For this reason, it is justifiable to consider whether fortification might prove more advantageous, at least over the short term.

Here the principles set forth in the joint statement should be followed. If it seemed clear that there would be an advantage from the increased consumption of a given nutrient by a substantial segment of the population, then its addition in reasonable amounts to a food might be approved, provided it was agreed that the food would prove an effective vehicle of distribution to those needing it. This means fortifying specific foods with specific nutrients, not the approval of the fortification of foods in general with the nutrients in question. The latter would be wasteful and could become so extensive as to prove harmful, as a result of excessive intakes or of imbalances thus created. The principles which should be followed also rule out the indiscriminate addition of a long list of nutrients, except on the basis of evidence of a need for each and that the food selected would be a suitable carrier for all. Otherwise, such multi-fortification becomes merely a shot-gun method of trying to remedy hypothetical deficiencies, without any convincing evidence that a mixture of several supplements is needed.

The writer (3) has recently reviewed the question of the multi-fortification of milk, pointing out how this violates the principles previously outlined. Certain food fortifications now practiced or proposed involve the addition of a nutrient to the extent that a recommended daily intake of the food in question supplies the entire daily needs. This practice could obviously lead to such an excessive fortification of our food supply as to be entirely contrary to policies which should govern diet selection and good nutrition.

The argument that the addition of a given nutrient to a given food will make that food nutritionally more complete does not justify the addition. It is completeness of the diet as a whole that counts. The proposal that bread should be fortified with lysine is a case in point. Experiments have shown that the protein of white flour and, thus, of most bread is deficient in this amino acid and can be improved in terms of rat growth by its addition. The important question is whether there are lysine deficiencies in our diet as a whole. White bread furnishes nearly 25 per cent of the protein in our national average food supply, while over 60 per cent comes from animal products. These products contain approximately four times as much lysine per 100 gm. protein as does wheat flour. There may be certain segments of our population which eat so little of the high-lysine foods

as to have diets deficient in this amino acid, but this possibility needs proof. It seems very unlikely. The possibility is, of course, much greater in those countries where 60 to 80 per cent of the calories consumed are supplied by cereals.

There are other proposals which appear to have merit in the case of the individual foods but which need examination in terms of the diet as a whole. The restoration of the ascorbic acid lost in pasteurizing milk, the so-called standardization of tomato juice at a high level of this vitamin, the fortification of winter milk and butter to their summer levels of vitamin A, and the fortification of skim milk with vitamins A and D are all examples of proposed additions which should be examined in terms of the principles previously discussed.

ADDITIVES TO DIETS

The foregoing discussion has dealt with additives to selected foods. Supplements to the diet as a whole are represented by pharmaceutical preparations sold as capsules and pills. The magnitude of the nutritional considerations involved here is indicated by the estimate that the volume of business is of the order of hundreds of millions of dollars annually. These preparations range from those containing only a few vitamins to complex mixtures of many vitamins, minerals, amino acids, and natural products or concentrates of them purporting to contain unidentified essentials. One preparation, for example, contains thirty-five ingredients including alleged vitamins and minerals for which no physiologic need has been demonstrated, plus substances such as papain and chlorophyll. The absence of any nutritional basis for some of the substances included and the preposterous claims made lead some to feel that the public might be better off if none of these products were allowed to be sold. Yet, one must recognize that there is a real place for some of these products and try to arrive at principles which should govern our attitude toward them.

My discussion will be limited to those preparations marketed to supplement the diet in the interest of maintaining good nutrition in healthy persons. It will not consider therapeutic use which, of course, should lie in the province of the physician.

The bulk, however, of the commercial vitamin preparations are promoted as dietary supplements for general use. Thus, our attitude toward their use by healthy persons is one of large importance. In my judgment, such use is nutritionally justifiable only in specific individual situations, such as reduced appetite and conditions requiring temporary dietary restriction which may prevent the consumption of a diet adequate in all nutrients. Promoters of vitamin preparations stress their importance for the many in our population who have poor dietary habits, an attitude which can intensify the problem of correcting these habits through sound nutrition education on the importance of a properly selected diet of available foods. Any use of vitamin supplements in the case of poor dietary habits should be temporary, not the acceptance of a bad habit.

Even though there may be special conditions where appropriate vitamin and/or mineral supplements to the diets of healthy persons are temporarily needed, certain principles should guide any additions made. Apart from frank deficiency states which call for medical advice and presumably therapeutic treatment, the levels of vitamins and minerals supplied as additives should furnish a substantial part of those represented by the Recommended Dietary Allowances, but should not exceed them. To argue that higher levels should be used is to argue that the allowances are wrong by being too low for their established purpose of maintaining good nutrition in healthy persons, or that the pure nutrients are less well utilized than those in natural foods. Many preparations now offered for general use, i.e., regular intake instead of therapy, contain two or three times the recommended allowances for certain vitamins, but only small fractions of others. Such preparations have no demonstrated place in a nutritional program. Advocates of intakes two or three times the allowances state that "stress and conditioning factors" which result in lowered absorption, higher metabolic requirements, or higher losses through excretion may call for intakes markedly in excess of the liberal allowances. There is no evidence, however, that there are an important number of these cases which are not definitely pathologic.

The specific vitamins or minerals needed as additives will depend on the situation. There appears, however, to be no justification for adding any nutrient for which no human dietary need has been demonstrated, or of one for which no data are available as to quantitative need. Nor is it justifiable to include a substance for which any additional need, beyond that supplied in the restricted diet under consideration, is highly improbable. I am aware that this is a very strict attitude which would rule out a large number of nutrients now frequently included in standard pharmaceutical preparations sold for general use. For example, it would rule out vitamin E on the basis that its usefulness as a dietary additive to the human diet has not been demonstrated. Similarly, there are certain B vitamins for which lack of information as to quantitative requirements and their distribution in foods prevents any conclusion that they have a useful place as additives in restricted diets.

Of the dozen or more mineral elements which are known to be dietary essentials for man, only five or six are likely to be deficient in restricted diets. Of these, sodium, chlorine, and iodine should regularly be supplied by common salt and not in a vitamin-mineral mixture. As regards the various trace elements, such as copper, manganese, zinc, cobalt, and

molybdenum, which are essential primarily in enzyme systems, there is lack of evidence that their addition as such to the human diet is needed under any conditions. It is agreed that this is a field in which studies are badly needed. I have not attempted to review the case for all the vitamins, minerals, and other substances frequently included in supplements offered for general use. The cases cited serve to illustrate the principles I feel should govern the approval of a given dietary additive.

I know that my attitude may be challenged on the basis that, in view of the inadequate state of our knowledge as to what the body needs and as to what is contained in foods, it may sometimes be justifiable to use certain additives as "insurance." Accepting an insurance policy of that nature throws the case wide open and by-passes the fact that man has survived in vigorous health on food supplies that are still available to everyone. Since we cannot be absolutely sure that the present recommended allowances are adequate for all normal individuals under all conditions, it can be argued that more of each nutrient should be added as insurance. Since quantitative data are lacking as to body needs in some instances and the exact food content of certain vitamins and minerals is uncertain, it can be argued that supplements of them should be included until proof that they are not needed is established. This would support the addition to the human diet of organic substances and minerals found in the body and known to be biologically active, for which no evidence exists that they are dietary essentials. In fact, the policy can be used to justify the daily use of such a mixture as previously referred to containing thirty-five or more ingredients. One can say that this would not be common sense, but what rules would common sense make which could be defended once the policy of empirical insurance is adopted? A statement of specific risks of demonstrated importance, which would certainly be eliminated by specific additives, is needed.

Furthermore, the possibility of physiologic harm from dietary additions made on the basis of blind insurance is a real one, particularly as regards the trace mineral elements. As an extreme example, molybdenum recently discovered as a constituent of xanthine oxidase is now being included in certain supplements without any adequate knowledge of either requirements or amounts naturally present in diets. Yet this element has been shown to be highly toxic to animals in the trace amounts occurring in certain forages. Some minerals, shown essential for animals in trace quantities, cause harm when included at higher levels because of imbalances created with respect to other minerals. Zinc is essential in the carbonic anhydrase enzyme system, but an excess interferes with another enzyme system by causing an imbalance with respect to copper.

The sales programs of some of the concerns promoting the uses of complex vitamin and mineral mixtures are contributing to the problem of food faddism and, thus, hurting rather than helping the cause of nutrition.

It has been the purpose of this paper to consider the attitudes which nutritional scientists should take in approving the use of various food and dietary additives. The question as to whether the sale of these products may call for some legal control, in the interest of public health and sound nutritional policy, involves other considerations not mentioned here.

Various points discussed in this paper emphasize the limitations of our knowledge of body requirements and of the distribution of needed nutrients in our foods and diets. It is the obligation of the nutritional scientist to fill in the gaps in this knowledge as rapidly as possible through research which must take account of the new technologic developments affecting the character of many foods. As we obtain more knowledge along these lines, we will have a better basis for assessing the merit of various proposals regarding additives. New facts may justify more widespread use in various foods and diets than indicated by the present discussion. I believe, however, that both nutritional policy and public health will be best served by insisting on a factual basis for whatever additions are approved. It is not sound judgment to encourage policies that would lead the public away from a constant emphasis on properly selected diets as the primary basis for good nutrition.

REFERENCES

(1) Council on Foods and Nutrition: A statement of general policy concerning the addition of specific nutrients to foods. J. A. M. A. 154: 145, 1954.

(2) Food and Nutrition Board: Recommended Dietary Allowances, Revised 1953. Natl. Acad. Sci.—Natl. Research Council Pub. 302, 1953.

(3) Maynard, L. A.: The fortification of whole milk and skim milk. J. Dairy Sci. 37: 624, 1954.

Effect of Heat and Cold on Teeth

That thermal shock to which teeth are subjected when we first eat food piping hot and follow it with a drink of ice water, may increase susceptibility to dental caries has been suggested by Dr. Herbert A. Pohl and Douglas G. Pohl of E. I. duPont deNemours, Inc.

In experiments with test-tube teeth given 72 thermal shock cycles, 21 of 50 broke under crushing pressure, while of 50 teeth not subjected to the temperature-change shocks, only 11 broke. The Pohls suggest that cracking caused by repeated thermal shocks may open the way for decay.—*From* Science Digest, *February 1955.*

The Calcium Controversy[1]

MARGARET A. OHLSON, Ph.D.[2]

Department of Foods and Nutrition, Michigan State College, East Lansing

FOR many years a generous intake of calcium for adults has been recommended. The acceptance of a high calcium requirement has been associated with an almost missionary zeal rather than an objective appraisal of the evidence on which the recommendations were based. Thus there was little opposition in 1948 to the recommendation of the Food and Nutrition Board to increase the adult calcium allowance to 1 gm. per day and an expressed concern when the Board reversed its previous action and reduced the allowance to 0.8 gm. per day in 1953 (1).

It would not be possible in the space allotted for this paper to review, in detail, the data on which these decisions were made. Rather, I should like to discuss some of the kinds of evidence which the committee considered and the changes in interpretation of laboratory and clinical findings which newer studies have imposed. The influence of disease on the bone, endocrine dysfunction, and hypervitaminosis D will not be considered since these conditions have little significance for determining a dietary recommendation for the normal population. Only the calcium allowances for the adult and for the pregnant woman will be considered. This paper is not intended to represent a comprehensive review of the literature on calcium metabolism but rather to express a point of view in approaching the problem of assigning a recommended allowance. Therefore, many excellent papers which could be used to confirm the ideas expressed have been omitted for lack of space. Acknowledgement and apology are extended to the authors who have been omitted.

The recommendation for increasing the calcium allowance for adults which was made in 1948 was based essentially on three kinds of experimental data: (a) the distinguished studies on the laboratory rat made by Sherman and his co-workers (2), (b) balance experiments which suggested that most adults respond with retention to an increase in the dietary supply of calcium when the previous intake has been low (3, 4), and (c) evidence that women in the age period of the menopause and older men and women with marked osteoporosis tend to ingest diets poor in a number of nutrients, including calcium, and to retain calcium showing clinical improvement when the diet is improved (5–7).

There is a real question whether the experiments using the laboratory rat can be applied to man even though the value of these well planned experiments in describing the nutrient requirements of the rat is not questioned. The growth centers in the bones of the rat do not close at puberty as they do in man; the incisor teeth also continue to grow throughout the life cycle of the animal, and calcium needs are different during growth. Moreover, recent evidence suggests a capacity for rapid adjustment to changes in the calcium intake by the laboratory rat, on diets controlled for adequacy of other nutrients (8).

That man also adjusts to low intakes of calcium is evident from studies of racial groups who have existed for generations on 200 to 400 mg. calcium per day (4). However, the rapidity of such adjustments and the advantage or loss to the organism in terms of health and longevity have yet to be proved. Also, the conditions under which our society selects its food are not always such that one nutrient may be lowered without changing the character of the rest of the diet. Since calcium can be utilized only when certain cellular mechanisms are capable of normal activity, it is reasonable to suppose that the balance of the rest of the diet may be important although direct proof is lacking.

Despite wide variations in response, the blood calcium of the healthy adult remains remarkably constant even with severe osteoporosis (9, 10).

BONE METABOLISM

By far the greatest quantity of calcium in the body is found in bone. Therefore, no attempt to

[1] Authorized for publication as Journal Article No. 1695 of the Michigan Agricultural Experiment Station. Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 29, 1954.

[2] The assistance of the following graduate students in the compilation and analysis of data is gratefully acknowledged: Beth Alsup, Roberta Bleiler, Mary E. Furnivall, Laura Jane Harper, Marion Jean Hayton, Deloris A. Kereluk, and Edna Strahan Scott.

evaluate the calcium requirements of adult man should be made without a brief review of the metabolism of bone as described from recent studies with tagged atoms (11). The use of radioactive calcium has confirmed the concept that adult bone is a dynamic substance which undergoes a constant remodeling during life. The rate of remodeling is slower in the adult but otherwise would appear to be the same process seen in the bone development in the young animal, exclusive, of course, of growth at the epiphysis. Formation of new bone and destruction of previously deposited bone go on simultaneously.

A greatly simplified description of the relation between calcium and bone metabolism in the adult could be as follows. After the skeleton has reached maturity, a healthy adult would tend to reach a state in which calcium intake and outgo are approximately equal, and it is presumed that the forces of anabolism and catabolism in the bone are also balanced so that in spite of a constant remodeling of bone, the total calcium concentration of the skeleton would remain essentially constant, as long as the organic matrix of bone is functionally intact. If one could assume the reuse of catabolized calcium without wastage, there should be no dietary calcium requirement after skeletal maturation except during pregnancy and lactation. The average man would not appear to be that efficient.

Evidence from examinations at autopsy and by X-ray (12) indicate that the weight of the average skeleton increases through age thirty-five, then decreases gradually with yearly variations until about sixty-five, and progressively during advanced ages. It may be significant that most of the data concerning the skeletal development during the first three decades have been based on X-ray studies of selected cases known to be in a good state of nutriture, while information on the later decades has been obtained from skeletons of unclaimed bodies. The nutritional history of the latter subjects was unknown, but the nature of the material suggests that nutrition may have been limited by poverty and disease. Moreover, the variability of mineralization observed in the younger group, known to be well nourished, was small. However, after age thirty, marked decalcification could be found in selected cases of relatively young adults while others died at advanced ages with little evidence of decalcification.

In recent unpublished evidence from long continued balance studies on adult women, calcium equilibrium was not seen in the day-by-day balance but resulted from the sum of cyclic periods of gain or loss of the mineral (13). Periods of total loss or gain of calcium may be continued for weeks and be reversed without changes in the diet. Abrupt changes in the calcium ingested as a part of an otherwise well balanced diet are reflected in the expected changes in retention and, at least within the range of intake of 100 to 1000 mg. per day, intake and retention tend to be highly correlated (4, 14).

It is assumed that retention or loss of calcium by the adult must measure a similar shift in the total bone calcium since there is no other storehouse adequate to explain the amounts of calcium exchanged. Since periods of actual calcium loss do occur in adults, some dietary provision for calcium to replace these losses is needed. The problem is how much?

ENDOCRINE CONTROL OF CALCIUM METABOLISM

The entire process of calcium metabolism is under the control of the endocrine systems of the body and depends on the capacity for normal functioning of the cells which form the organic matrix of bone. Potentially, either bone formation or destruction could predominate indefinitely, though there would appear to be well established inhibitions to continued calcium accretion since, in the normal adult, the addition of bone salts does not continue to the point of deformity.

The endocrine glands also play a major if not a dominating role in excess bone catabolism (15, 16). However, in this case, specific insults, such as toxic doses of vitamin D (17–19) or immobilization of the body (20), precipitate losses of calcium which, if the insult is corrected within a reasonable time, do not appear to change the capacity of the bone to rebuild, although, in the inactive aged person, catabolism may be associated with such a complete loss of osteoblasts, that the capacity for repair is lost (10, 21). The terminal phase of this process is senility.

AGING AND CALCIUM METABOLISM

The nature of the aging processes is such, however, that it cannot be assumed that the capacity to repair is lost suddenly, and some of the misunderstanding in interpreting the use of calcium by the aged probably arises from the impossibility of measuring the degree of change which has occurred in a living patient. Stearns (5) has reported that severe osteoporosis of the menopause may be reversed by attention to improved diet. The diets used not only increased the intakes of calcium, but were balanced with respect to other nutrients.

Vinter-Paulsen (9) suggests that the decalcification of the skeleton of the aged may be due to the generalized atrophy of the aged but that, in the case of osteoblastic atrophy, nutritional failure may be a secondary factor. He reported the occurrence of osteoporosis in thirty-three subjects, ages sixty-eight to ninety-six years, in relation to current dietary practices and dietary history of intake of calcium. Seventy-four per cent with intakes of calcium below 500 mg. per day (more than half of the total cases)

showed osteoporosis of the spine; 14 per cent with intakes between 500 and 800 mg. showed spinal changes. No person with an intake of calcium of more than 800 mg. per day had bony changes demonstrated by X-ray.

A few individual case studies found in the literature give further credence to the assumption that the quality of the diet may be a factor in senile osteoporosis (6) and that most aging individuals with a degree of osteoporosis will profit by additional calcium (7).

The discerning reader will be aware that the above generalizations represent deductions from a wide variety of experimental evidence. There is little direct proof to support a given dietary recommendation for calcium. On the other hand, there is no evidence that calcium intakes which have been suggested in the recommended allowances are of any disadvantage to the individual, since the healthy body disposes of unneeded calcium by way of the bowel [urinary calcium increases slightly but not proportionately with increased intake (22)] within those ranges of intake which may be supplied by food, and there is no evidence that unwanted calcification of either soft tissues or bone occurs from the stimulus of a generous intake of the mineral.

BALANCE STUDIES

Because of the inability to examine the daily changes in the calcium content of bone directly, many investigators have approached the problem of determining a calcium requirement from a study of the results of the balance experiment (3, 4, 10, 14, 16, 23–40). In children, the results of the balance study may be interpreted in relation to growth and development of the centers of ossification. This measure is lost in the study of the adult. Nevertheless, some generalizations may be made.

The literature provides a record of more than 17,000 balance days on adults of all ages. However, the diets used, the length of the observation period, the degree of restriction other than diet imposed on the subject, and the fact that retention reflects recent dietary change before it reflects nutritive need make the interpretation of the data difficult.

Few adults eating diets characteristic of our society are in equilibrium on intakes of less than 500 mg. calcium per day (23, 36). National groups in equilibrium with low calcium intakes live in tropical and semi-tropical areas with high exposure to sunshine. Although limited data provides little direct evidence of need for vitamin D by the adult or aged other than that obtained from ordinary exposure to sunshine (17, 41–44), variation in available sunshine should not be ignored, and most of the published studies have been from the North Central area.

At low intakes of calcium, utilization tends to be more efficient when the diet is made up of a few simple foods carefully balanced to provide all other known nutrient requirements. At higher intakes, the calcium of self-selected diets is efficiently used which may be only an expression of the fact that in order to ingest 800 to 1000 mg. calcium from the natural foods which we like and eat, some milk or cheese and generous servings of vegetables are needed, all of which improve the total nutrient mixture.

Extreme variations among individuals in the metabolism of calcium are found (35, 36). The value of the balance experiment can be biased by the inclusion of a few individuals in a small series of cases who are unusually wasteful or economical in metabolizing calcium. In spite of all these variables, various laboratories have recommended adult calcium intakes which vary from 700 to 900 mg. per day (10, 14, 36, 37, 40). In terms of the variations in data studied, this is not a fundamental difference but a really amazing agreement.

The choice of the Food and Nutrition Board of 800 mg. per day is a compromise between these values. These estimates are not to be confused with minimum requirements to which adults could adjust under a prescribed dietary routine but rather as working values for the planning or evaluation of group dietaries composed of the food mixtures and meal distributions of our society. It must be recognized that many adults in our society will remain in excellent nutrition with intakes of 500 mg. calcium per day and a few with less than this amount. A few will need more than the prescribed allowance. It is possible that the requirements for women, particularly until sixty-five or seventy years, may be slightly higher than those for men (14), but differences in techniques of various experiments does not permit a more didactic statement at this time. Finally, there is no convincing evidence of early demineralization of the adult skeleton at intakes of calcium of 800 mg. or more per day in the absence of endocrine dysfunction, disease, or hypervitaminosis D.

PREGNANCY

The 1953 allowances also changed the recommendations for calcium intake during pregnancy in that increases in nutrients were to be made during the last trimester rather than the last half of pregnancy.

In pregnancy, as in childhood, there are several measurements which may be applied in determining the adequacy of the calcium intake. The total amount of calcium needed for the fetus and related tissues has been determined (46, 47).

Blood calcium has been studied as an index to the requirement of calcium during pregnancy (48); a gradual decrease, probably due to hydration, in the amount of 0.05 mg. per 100 ml. can be expected,

the lowest point being reached about the thirty-second week of gestation. The blood calcium was higher throughout the curve when the thirty-second week occurred in the late summer as compared with early winter, which would suggest that vitamin D was more important than the calcium intake. Mendenhall and Drake (49) believe that muscular cramps and related discomforts of pregnancy are sharply reduced when an extra amount of calcium or vitamin D is given, and again, the vitamin D was equally or more effective.

CALCIUM NEEDS OF THE FETUS

Since the balance experiment conducted during pregnancy can be evaluated in relation to the needs of the fetus, the literature has been explored for calcium studies in cases of apparently healthy, uncomplicated pregnancy. Data reported are from studies conducted in the United States (46, 50–57). Foreign studies were omitted to avoid the complications of differences in dietary practices, the influence of war time food supplies on maternal nutrition, and other factors. Fifty-nine women were studied, many of them for successive months. Each sample represented not less than three successive days of collection of food and excreta and in all cases, the diet was either freely chosen or patterned after the eating practices of the woman during the intervals between collection periods. The period of pregnancy was subdivided into lunar months, and each woman was counted as a separate individual for each month of study. Thus 190 studies were available for comparison.

A mean daily intake and retention were computed for each woman for each month of study. No attempt was made to weigh the data for days of participation since other variables dependent on combining data from many laboratories could not be separated. Unfortunately, complete information on the amount of vitamin D ingested is lacking. Calcium intakes were less than 1 gm. per day in only 14 of the 190 periods, a situation not characteristic of recent reports (58) which suggests that these women either had unusually good food habits or that willingness to participate in a prolonged balance experiment during pregnancy is associated with a certain docility in the acceptance of dietary recommendations. Since only one of the experimental plans indicated the use of calcium salts, it would be obligatory that milk and milk products were taken in generous amounts to satisfy these intakes. This point is important not only in consideration of the absolute intakes of calcium but of the contribution to the diet in terms of other valuable nutrients in milk.

Table 1 indicates mean calcium intakes and retentions and an estimate of the needs of the fetus for ten lunar months of pregnancy. The actual calcium storage of a multipara with an unusually good physiologic capacity for reproduction also is given (51).

Calcium intakes ranged from 603 to 3258 mg. per day and retentions from a loss of 1490 mg. per day in the third month to a gain of 1068 mg. in the tenth month.

If the trimesters are considered separately, it is apparent that little storage of mineral is made during the first four months and little is needed to supply the fetus. Storage was unrelated to intake, if one may judge from a correlation coefficient of 0.153 (about one chance in three that the result was not due to factors other than intake). During the

TABLE 1

Calcium balance during pregnancy as related to fetal needs

TRIMESTER	LUNAR MONTH	MEAN INTAKE	MEAN RETENTION	NUMBER OF SUBJECTS		RETENTION REQUIRED FOR FETUS		CORRELATION COEFFICIENT OF INTAKE AND RETENTION
				Retaining	Losing	Reported by Coons (46)	Reported by Kelly *et al.* (47)	
		mg./day	*mg./day*			*mg./day*	*mg./day*	
I	1	0.975	0.013	2	1	—	—	
	2	1.062	0.068	1	0	0.002	—	
	3	1.480	−0.273	3	6	0.002	—	
	4	1.407	0.008	7	4	0.015	—	0.153
II	5	1.718	0.050	12	4	0.051	0.039	
	6	1.886	0.270	18	0	0.055	0.065	
	7	1.658	0.261	25	4	0.137	0.083	0.216
III	8	1.654	0.236	28	5	0.055	0.108	
	9	1.675	0.337	35	2	0.225	0.174	
	10	1.640	0.403	31	2	0.306	0.334	0.350**
Total required for fetus						33.37	23.23	—
Total retained during last 145 days (51)						52.90	—	

** Less than 1 chance in 100 of a fortuitious result.

third month, calcium losses predominated and were as high on intakes over 2000 as at 700 mg. per day, a result which is not unexpected in view of the physiologic changes occurring at this stage in pregnancy.

During the second trimester, the dependence of retention on calcium intake is still not convincing ($r = 0.216$, probability >0.05). In the fifth month, retentions just about equalled fetal demands; in the sixth and seventh months, however, retentions increased to from two to five times fetal needs. Since these increased retentions occurred on low as well as high intakes, it is presumed that some demand of pregnancy or of the women's prepregnant nutritional state stimulated the retention, and it is reasonable to assume that similar retentions would have occurred on mean intakes lower than those fed in these experiments.

The third trimester again was characterized by retentions sufficiently in excess of the needs of the fetus to allow for a considerable storage for lactation. In this trimester, intake and retention were highly correlated ($r = 0.350$ with 103 degrees of freedom) and in only 9 of 103 periods was there a total calcium loss. In spite of this correlation, an inspection of a scatter diagram (*Fig.* 1) suggests that the dependence of retention on intake is real only for intakes up to 1200 to 1500 mg. per day. This was confirmed by computing the correlation of retention and intake for intakes below and above 1500 mg. The correlation coefficients were 0.339 and 0.179, respectively. Only the former is significant.

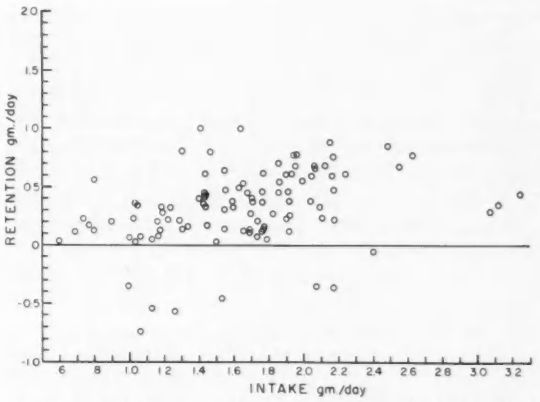


FIG. 1. *Relation of calcium retention to intake during third trimester of pregnancy.*

RECOMMENDED ALLOWANCES FOR PREGNANCY

Evaluation of our present allowances which recommend an increased intake of food only in the last trimester of pregnancy is difficult on the basis of these data. Mean retentions in this series would appear to be adequate for the development of a well calcified fetus and for a maternal reserve for lactation, but mean intakes were greater than the calcium allowance. During the sixth through the eighth months, many women of the series stored an additional amount of calcium which might be interpreted as the filling in of a pre-existing maternal deficiency due to the combined growth stimulus of pregnancy and a generous diet. There were thirteen women in the series less than twenty years of age, and some growth is to be expected at this age in the nonpregnant woman (59). However, more than half of the subjects throughout pregnancy were consuming calcium in amounts well above the recommended allowances, although the data showed a lack of correlation of intake and retention except in the last trimester. The one subject whose nutritional history and reproductive performance had been studied repeatedly and who was known to bear healthy babies and produce large amounts of milk while preserving her own nutritional state, stored somewhat larger amounts of calcium during each of the last five months of pregnancy than the mean of the group.

Studies are needed on diets in which the calcium intake is less than the present recommended allowance but in which all other nutritional requirements are met, including vitamin D, before it can be assumed that the present allowance is not satisfactory for women who enter pregnancy with good nutritional status. Any evidence of existing undernutrition at the onset of pregnancy would, however, suggest the need for increasing the diet earlier than the third trimester.

There is something to be said for keeping recommended allowances of nutrients as low as possible without sacrificing the nutritional integrity of the mother and her child. The technology of our society has decreased the average caloric requirements of women, and excessive weight gain during pregnancy increases the hazards of reproduction. Because of the balance of many other nutrients which milk provides, milk and its derivatives are the most practical form for feeding increased amounts of calcium. However, milk is not a complete food, and excess quantities could crowd out the other animal proteins, the fruits, vegetables, and cereals all of which contribute to the development of a nutritionally well endowed child and a healthy mother. Moreover, many women resist the consumption of large volumes of milk. A dietary prescription which is realistic in terms of the taste and ability of the homemaker to provide special items will, in general, be accepted more readily than one which demands too many adjustments in her living and eating habits.

CONCLUSION

Perhaps the most useful lesson to be learned from an attempt to establish a dietary allowance for any given nutrient is that the value chosen is a

necessary compromise based on all of the evidence available, much of which will be conflicting. Certainly this is true in the case of calcium. A case could be made for calcium allowances for the adult and the pregnant woman both above and below the figures selected by the Food and Nutrition Board if selected data were used. An attempt has been made to consider all the evidence, old and new, each time the allowances have been revised. The following quotation from the introduction to the 1953 Recommended Dietary Allowances (1) should be reread frequently by anyone using the Allowances in the regular evaluation of diets.

"The term 'Recommended Allowances' was chosen by the Food and Nutrition Board in 1941 to avoid any implication of finality of standards or of minimal or optimal requirements. The values proposed represent exactly what is implied in the literal interpretation of the words 'recommended dietary allowances', i.e., levels of nutrient intake appearing desirable for use in planning diets and food supplies. This same general principle or objective is reaffirmed in the present revision."

The above statement is particularly applicable in the case of the calcium allowances. We do not have a definitive test for good calcium nutrition, and we know that people are different. The calcium allowance is not a measuring stick for forming judgments about the individual but a guide for planning food for our population.

REFERENCES

(1) Food and Nutrition Board: Recommended Dietary Allowances, Revised. Natl. Acad. Sci.—Natl. Research Council Pub. No. 129, 1948; No. 302, 1953.

(2) Sherman, H. C.: Calcium and Phosphorus in Foods and Nutrition. New York: Columbia University Press, 1947.

(3) Ohlson, M. A., Jackson, L., Beegle, R. M., Dunsing, D., and Brown, E. G.: Utilization of an improved diet by older women. J. Am. Dietet. A. 28: 1138, 1952.

(4) Hegsted, D. M., Moscoso, I., and Collazos, C., C.: A study of the minimum calcium requirements of adult men. J. Nutrition 46: 181, 1952.

(5) Stearns, G.: Recent investigations in mineral nutrition. J. Am. Dietet. A. 18: 366, 1942.

(6) Effect on bones of a restricted diet. Foreign Correspondence. J. A. M. A. 106: 55, 1936.

(7) Adams, M., Boothby, W. M., and Snell, A. M.: Metabolic studies in osteoporosis. Am. J. Physiol. 114: 383, 1936.

(8) Henry, K. M., and Kon, S. K.: The relationship between calcium retention and body stores of calcium in the rat: effect of age and of vitamin D. Brit. J. Nutrition 7: 147, 1953.

(9) Vinther-Paulsen, N.: Calcium and phosphorus intake in senile osteoporosis. Geriatrics 8: 76, 1953.

(10) Bogdonoff, M. D., Shock, N. W., and Nichols, M. P.: Calcium, phosphorus, nitrogen, and potassium balance studies in the aged male. J. Gerontol. 8: 272, 1953.

(11) Metabolic Interrelations with Special Reference to Calcium. Trans. of the 5th Conference, 1953. (Reifenstein, E. C., Jr., ed.) New York: Josiah Macy, Jr. Foundation, 1954.

(12) Cobb, W. M.: Skeleton. *In* Cowdry's Problems of Aging. 3rd ed. (Lansing, A. I., ed.) Baltimore: Williams & Wilkins Co., 1954, p. 791.

(13) Personal communication.

(14) Ohlson, M. A., Brewer, W. D., Jackson, L., Swanson, P. P., Roberts, P. H., Mangel, M., Leverton, R. M., Chaloupka, M., Gram, M. R., Reynolds, M. S., and Lutz, R.: Intakes and retentions of nitrogen, calcium and phosphorus by 136 women between 30 and 85 years of age. Fed. Proc. 11: 775, 1952.

(15) Albright, F., and Reifenstein, E. C., Jr.: The Parathyroid Glands and Metabolic Bone Disease: Selected Studies. Baltimore: Williams & Wilkins Co., 1948.

(16) Johnston, J. A.: Nutritional Studies in Adolescent Girls and Their Relation to Tuberculosis. Springfield, Ill.: Charles C Thomas, 1953.

(17) Bauer, W., Marble, A., and Claflin, D.: Studies in the mode of action of irradiated ergosterol. 1. Its effect on the calcium, phosphorus and nitrogen metabolism of normal individuals. J. Clin. Invest. 11: 1, 1932.

(18) Bauer, W., and Marble, A.: Studies in the mode of action of irradiated ergosterol. 2. Its effect on the calcium and phosphorus metabolism of individuals with calcium deficiency diseases. J. Clin. Invest. 11: 21, 1932.

(19) Freeman, S., Rhoads, P. S., and Yeager, L. B.: Toxic manifestations associated with prolonged ertron ingestion. J. A. M. A. 130: 197, 1946.

(20) Howard, J. E., Parson, W., and Bigham, R. S., Jr.: Studies on patients convalescent from fracture; urinary excretion of calcium and phosphorus. Bull. Johns Hopkins Hosp. 27: 291, 1945.

(21) Bogdonoff, M. D., Shock, N. W., and Parsons, J.: The effects of stilbestrol on the retention of nitrogen, calcium, phosphorus, and potassium in aged males with and without osteoporosis. J. Gerontol. 9: 262, 1954.

(22) Knapp, E. L.: Factors influencing the urinary excretion of calcium. 1. In normal persons. J. Clin. Invest. 26: 182, 1947.

(23) Bauer, W., Albright, F., and Aub, J. C.: Studies of calcium and phosphorus metabolism. 2. The calcium excretion of normal individuals on a low calcium diet, also data on a case of pregnancy. J. Clin. Invest. 7: 75. 1929.

(24) Johnston, F. A., McMillan, T. J., and Falconer, G. D.: Calcium retained by young women before and after adding spinach to the diet. J. Am. Dietet. A. 28: 933, 1952.

(25) Ohlson, M. A., Jackson, L., Boek, J., Cederquist, D. C., Brewer, W. D., and Brown, E. G.: Nutrition and dietary habits of aging women. Am. J. Pub. Health 40: 1101, 1950.

(26) Steggerda, F. R., and Mitchell, H. H.: The calcium balance of adult human subjects on high- and low-fat (butter) diets. J. Nutrition 45: 201, 1951.

(27) Owen, E. C.: The calcium requirement of older male subjects. Biochem. J. 33: 22, 1939.

(28) Brewer, W. D., Cederquist, D. C., Williams, B., Beegle, R. M., Dunsing, D., Kelley, A. L., and Ohlson, M. A.: Weight reduction on low-fat and low-carbohydrate diets. 2. Utilization of nitrogen and calcium. J. Am. Dietet. A. 28: 213, 1952.

(29) McCance, R. A., and Walsham, C. M.: The digestibility and absorption of the calories, proteins, purines, fat and calcium in wholemeal wheaten

bread. Brit. J. Nutrition 2: 26, 1948.
(30) DAUM, K., TUTTLE, W. W., KISGEN, R., IMIG, C. J., MARTIN, C., KLAPKA, M. R., SHEEHAN, J., AND AGLE, M.: Utilization of nitrogen, phosphorus, calcium, and iron by men on different breakfasts. J. Am. Dietet. A. 27: 475, 1952.
(31) LEVERTON, R. M., AND GRAM, M. R.: Further studies of obese young women during weight reduction. Calcium, phosphorus, and nitrogen metabolism. J. Am. Dietet. A. 27: 480, 1951.
(32) LEICHSENRING, J. M., NORRIS, L. M., LAMISON, S. A., WILSON, E. D., AND PATTON, M. B.: The effect of level of intake on calcium and phosphorus metabolism in college women. J. Nutrition 45: 407, 1951.
(33) HOMBURGER. F., BONNER, C. D., AND FISHMAN, W. H.: Questionable significance of the ratios of phosphorus, nitrogen and sulfur with reference to metabolic studies in man based on effects of ACTH, cortisone, and aureomycin. Metabolism 1: 435, 1952.
(34) ACKERMANN, P. G., AND TORO, G.: Calcium and phosphorus balance in elderly men. J. Gerontol. 8: 289, 1953.
(35) STEGGERDA, F. R., AND MITCHELL, H. H.: Variability in the calcium metabolism and calcium requirements of adult human subjects. J. Nutrition 31: 407, 1946.
(36) MITCHELL, H. H.: Adaptation to undernutrition. J. Am. Dietet. A. 20: 511, 1944.
(37) MITCHELL, H. H., AND HAMILTON, T. S.: The dermal excretion under controlled environmental conditions of nitrogen and minerals in human subjects, with particular reference to calcium and iron. J. Biol. Chem. 178: 345, 1949.
(38) JOHNSTON, F. A., MCMILLAN, T. J., AND EVANS, E. R.: Perspiration as a factor influencing the requirement for calcium and iron. J. Nutrition 42: 285, 1950.
(39) PATTON, M. B., WILSON, E. D., LEICHSENRING, J. M., NORRIS, L. M., AND DIENHART, C. M.: The relation of calcium-to-phosphorus ratio to the utilization of these minerals by 18 young college women. J. Nutrition 50: 373, 1953.
(40) NICOLAYSEN, R., EEG-LARSEN, N., AND MALM, O. J.: Physiology of calcium metabolism. Physiol. Rev. 33: 424, 1953.
(41) OWEN, E. C., IRVING, J. T., AND LYALL, A.: The calcium requirements of older male subjects with special reference to the genesis of senile osteoporosis. Acta med. scandinav. 103: 235, 1940.
(42) HART, M. C., TOURTELLOTTE, D., AND HEYL, F. W. The effect of irradiation and cod liver oil on the calcium balance in the adult human. J. Biol. Chem. 76: 143, 1928.
(43) KELLY, F. C., AND HENDERSON, J. MCA.: The influence of certain dietary supplements on the nutrition of the African native. 1. J. Hygiene 29: 418, 1930.
(44) HUNSCHER, H. A., DONELSON, E., ERICKSON, B. N., AND MACY, I. G.: Results of the ingestion of cod liver oil and yeast on calcium and phosphorus metabolism of women. J. Nutrition 8: 341, 1934.
(45) MCKAY, H., PATTON, M. B., PITTMAN, M. S., STEARNS, G., AND EDELBLUTE, N.: The effect of vitamin D on calcium retentions. J. Nutrition 26: 153, 1943.
(46) COONS, C. M.: Studies in Metabolism During Pregnancy. Okla. Agric. Exper. Sta. Research Bull. No. 223, March, 1935.
(47) KELLY, H. J., SLOAN, R. E., HOFFMAN, W., AND SAUNDERS, C.: Accumulation of nitrogen and six minerals in the human fetus during gestation. Human Biol. 23: 61, 1951.
(48) MULL, J. W., AND BILL, A. H.: Variations in serum calcium and phosphorus during pregnancy. 1. Normal variations. Am. J. Obst. & Gynec. 27: 510, 1934.
(49) MENDENHALL, A. M., AND DRAKE, J. C.: Calcium deficiency in pregnancy and lactation. A clinical investigation. Am. J. Obstet. & Gynec. 27: 800, 1934.
(50) MACY, I. G., HUNSCHER, H. A., NIMS, B., AND MCCOSH, S. S.: Metabolism of women during the reproductive cycle. 1. Calcium and phosphorus utilization in pregnancy. J. Biol. Chem. 86: 17, 1930.
(51) HUMMEL, F. C., STERNBERGER, H. R., HUNSCHER, H. A., AND MACY, I. G.: Metabolism of women during the reproductive cycle. 7. Utilization of inorganic elements (a continuous case study of a multipara). J. Nutrition 11: 235, 1936.
(52) HUMMEL, F. C., HUNSCHER, H. A., BATES, M. F., BONNER, P., MACY, I. G., AND JOHNSTON, J. A.: A consideration of the nutritive state in the metabolism of women during pregnancy. J. Nutrition 13: 263, 1937.
(53) KNAPP, E. L., AND STEARNS, G.: Factors influencing the urinary excretion of calcium. 2. Pregnancy and lactation. Am. J. Obstet. & Gynec. 60: 741, 1950.
(54) OBERST, F. W., AND PLASS, E. D.: Calcium, phosphorus, and nitrogen metabolism in women during the second half of pregnancy and in early lactation. Am. J. Obstet. & Gynec. 40: 399, 1940.
(55) ADAIR, F. L., DIECKMANN, W. J., MICHEL, H., DUNKLE, F., KRAMER, S., AND LORANG, E.: The effect of complementing the diet in pregnancy with calcium, phosphorus, iron, and vitamins A and D. Am. J. Obstet. & Gynec. 46: 116, 1943.
(56) MACY, I. G., DONELSON, E., LONG, M. L., GRAHAM, A., SWEENEY, M. E., AND SHAW, M. M.: Nitrogen, calcium and phosphorus balances in late gestation under a specified dietary regime. A record of one case. J. Am. Dietet. A. 6: 314, 1930.
(57) PYLE, S. I., POTGIETER, M., AND COMSTOCK, G.: On certain relationships of calcium in the blood serum to calcium balance and basal metabolism during pregnancy. Am. J. Obstet. & Gynec. 35: 283, 1938.
(58) JEANS, P. C., SMITH, M. B., AND STEARNS, G.: Dietary habits of pregnant women of low income in a rural state. J. Am. Dietet. A. 28: 27, 1952.
(59) DONELSON, E. G., OHLSON, M. A., WATT, B. K., PATTON, M. B., AND KINSMAN, G.: Physical measurements of college women. Results of four consecutive years of study. Am. J. Dis. Child. 66: 21, 1943.

Value of Oiling Eggs

Most eggs coming to market from cold storage have been dipped in colorless, tasteless mineral oil which partly closes shell pores to keep moisture in. Does this practice have advantages for good eating?

Tests made at the State College of Washington, Pullman, under USDA sponsorship, have showed that if eggs are to be oiled, it is best done the day they are laid. They stand up higher when poached and make lighter, more tender angel food cake than eggs oiled a week after laying or left untreated. (In actual practice, many eggs are not oiled until about seven days old.) Oil treatment is of no value in maintaining flavor.

Diet Therapy in the Celiac Syndrome[1]

DOROTHY H. ANDERSEN, M.D., and EMMA M. MIKE

Associate Professor of Pathology, College of Physicians and Surgeons, and Assistant Attending Pediatrician, Babies Hospital, New York City; and *Dietitian, Babies Hospital, Columbia-Presbyterian Medical Center, New York City*

UNTIL the last few decades a large percentage of infants died during the first year or two of life. In 1915 for every 1000 live births in the United States, there were 100 deaths before the first birthday; by 1945, this figure had decreased to 38. The chief causes of infant deaths were diarrheal diseases, pneumonia, and other infections. The infant who was fed by formula rather than by breast was especially prone to illness and had a poor chance of survival.

The most important factors in this cheering improvement have been (a) increased knowledge of the manner in which infections are transmitted and the application of this knowledge by city and state health departments; (b) increased knowledge of food constituents and the spread and application of this knowledge in the home, school, and hospital; (c) increase in private and public social agencies so that fewer infants go without the needed food and care for economic reasons; and (d) the advent of antibiotics. The external causes of infection and malnutrition are now in large part under control.

Despite these advances in knowledge, many infants and children still suffer and sometimes die from chronic malnutrition or indigestion. In most instances these children are ill because they have some abnormality of digestion or metabolism which leads to poor tolerance or utilization of many of the foods on which normal infants thrive. For internal reasons they starve on a diet of plenty. The body contours often resemble those of any chronically starved child, with pot-bellies, spindly legs, large doleful eyes, and a retarded height and weight for their age (*Fig.* 1). Intermittent or chronic diarrhea with bulky, foul stools containing undigested material and a susceptibility to infection are also characteristic findings. A child who develops this picture is said to have the "celiac syndrome."

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 29, 1954.

About fifteen years ago a study of the celiac syndrome was begun at the Babies Hospital in New York City to find the various causes of the celiac syndrome, to develop practical ways of diagnosing the cause in the individual patient, to test old ways of treating the children, and to find new ones. The last often meant discovering what foods they could tolerate and utilize in spite of their digestive handicaps and what vitamins were needed in unusually large amounts. Some hundreds of infants and children have been studied in this way.

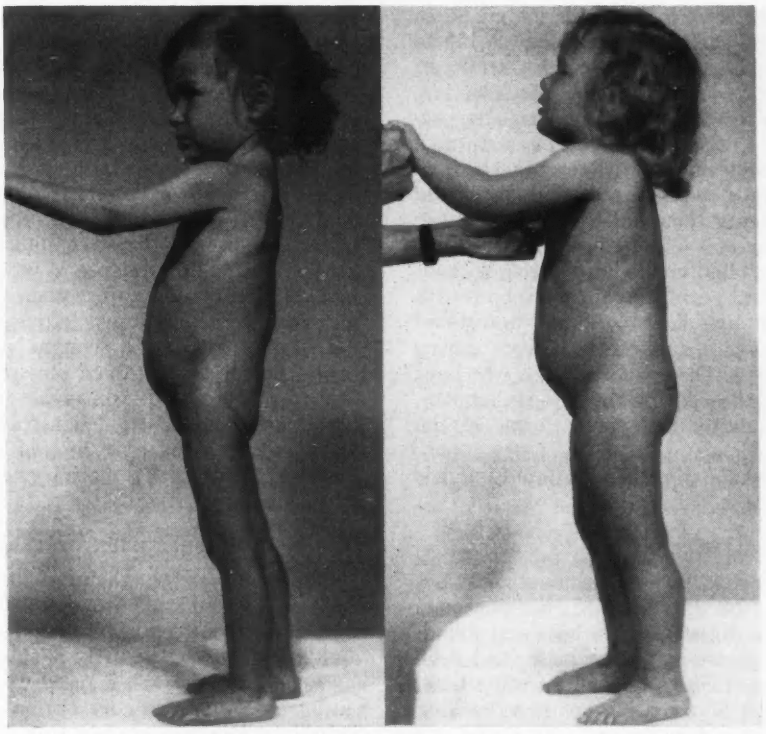
CAUSES OF INFANT MALNUTRITION

The causes of the chronic malnutrition and indigestion in these patients fall into three general categories:

(a) A small group actually were inadequately fed and are not properly included in the celiac syndrome. In New York, because of active public health and social service agencies, this is rarely because of poverty. In a few cases, the poor feeding was the result of a major psychosis of the mother; a number of cases of scurvy have been due to the boiling of the orange juice by an over-conscientious mother; and at least one case of beriberi was the result of a too-restricted, non-allergic diet designed to treat eczema. These children respond to a normal diet for their age.

(b) A larger group had an anatomic or bacteriologic cause for their malnutrition. This group includes patients with a great variety of diseases, the most common being cystic fibrosis of the pancreas. Cases of congenital megacolon, ulcerative colitis, tuberculosis of the intestine, and chronic dysentery were found. There were also a few patients in which the mesenteric lymph nodes were obstructed by tumor or tuberculosis so that the pathways of fat absorption were obstructed. In a few, the portal vein was abnormal and failed to deliver blood from the intestine to the liver.

Most of these children have steatorrhea or excess



Child with celiac disease, before treatment at twenty-one months of age, and following diet therapy for six months.

fat in the stools, either because the fat is not digested or if digested, it is not properly absorbed. Most improve on a low-fat diet.

(c) A still larger group, forming about two-thirds of the whole series, had no anatomic or bacteriologic cause for their disease, but nevertheless failed to thrive on a normal infant diet. The more severely ill of these are said to have "celiac disease." The milder and far more frequent form of the disease we have called "starch intolerance."

Although the celiac syndrome may be caused by a great variety of conditions, there are but two diseases which account for the great majority of cases. These are cystic fibrosis of the pancreas and mild or severe celiac disease. Neither of these are rare, since it is estimated that cystic fibrosis of the pancreas occurs in about one in 600 live-born infants, and mild celiac disease is several times as common. Before a discussion of the dietary treatment, a description of these diseases is in order.

CYSTIC FIBROSIS

In cystic fibrosis of the pancreas there is a congenital abnormality of the secretion of the pancreas causing it to form a hard, gelatin-like material which clogs the pancreatic duct. The pancreatic secretion, with its trypsin, lipase, and amylase, cannot enter the duodenum, and without these enzymes, digestion is incomplete. These children also have a tendency to bronchitis.

An infant with cystic fibrosis of the pancreas appears normal at birth but usually gains slowly in the first few months. He is usually hungry, and if allowed to consume all the food he wishes he may gain well; if he is fed only the calculated formula, his gain will be slow because much of the food, especially the fat, passes through him unused and the calculated intake falls short of his needs.

He is lively and seems well until his first respiratory infection, after which he may have bronchopneumonia or he may recover but have a persistent hacking cough until his next infection. If the disease remains undiagnosed and untreated, the majority of patients die of bronchopneumonia in the first year of life. The reason for the susceptibility to bronchopneumonia is not clear, but we do know that the infants who are fed so as to compensate for their defective digestion have greater resistance to infection, and with the aid of antibiotics, the majority survive the childhood years at least, go to school, and lead active, fairly normal lives. They remain susceptible to colds, are usually somewhat small for their age, have somewhat enlarged abdomens, and their stools are quite large and have a distinctive, foul odor.

These children continue to eat excessively, to

compensate for the fecal loss of food materials. In the newborn period such an infant requires 150 to 200 calories per kilogram body weight, while an older child needs 120 to 150 calories per kilogram, which is 50 to 75 per cent above the usual requirement. At all ages, the fat should be restricted, pancreatin should be given with each meal, and large supplements of vitamins A and D should be prescribed. Twenty thousand I.U. vitamin A per day are required.

A few of these children do fairly well without treatment for several years, and a few are born with intestinal obstruction due to hard, undigested meconium and require surgical treatment during their first week of life. There are also a few who have a tendency to diarrhea during the first six months, but these are all fairly uncommon forms of the disease.

Cystic fibrosis tends to recur in a family and is apparently based on heredity.

CELIAC DISEASE

The infant with celiac disease presents a somewhat different picture. In this disease no anatomic abnormality of the digestive tract has been found. This infant also appears normal at birth, and if he is breast-fed he continues to do well for some time. If he is formula-fed, he usually becomes a "feeding problem" with vomiting or poor appetite—or perhaps he eats well and has episodes of diarrhea. The most common story is that he presents a "feeding problem" for two or three months and then seems well for a while.

During the second six months he has a respiratory infection accompanied by diarrhea, and the loose stools continue after the infection is past. There may be four to eight a day. These stools are pale, bulky, pasty or semi-fluid, and foul, often with an acid or decayed odor. They may be foamy and often contain identifiable fragments of vegetable or other food. After some weeks or months, the infant becomes thin, undersized, inactive, irritable, and pot-bellied, and his appearance is characteristic. Many of these children develop signs of deficiency of one or more vitamins, partly because of their diarrhea but still more often because of the restricted diet allowed them.

The breast-fed infants who develop celiac disease remain well while they are on mother's milk and for many months thereafter, and usually do not become ill until the second year. Then, the pattern is similar to that of the infants with earlier onset of illness, except that instead of being late in learning to stand and walk, they have done these things at the proper time and then cease to do them.

Celiac disease tends to occur in siblings and first cousins, so that early diagnosis should be easier to achieve in the families known to have had one child with the disease. It is also wise to advise breast feeding for at least two months in younger siblings of a known case.

At present, most children recover from celiac disease before school age, though they may have loose stools with colds or be less than robust. There is apparent complete recovery at adolescence in nearly all. However, some adults with sprue or spastic colitis give a history of celiac disease in childhood. The families of children with celiac disease have a high incidence of digestive difficulties of various kinds, including intolerance to fat, milk, and chocolate. Mild diabetes in the grandparents' generation also occurs with abnormal frequency in these families, leading us to the thought that such families have a hereditary metabolic abnormality which may lead to a digestive disease under certain conditions, for example, being bottle-fed instead of breast-fed, or, in the adult, living on a limited and starchy diet. Feeding is important in both prevention and cure of these diseases.

DEFINITION OF TERMS

Before discussing dietary therapy for these children I would like to define my use of three terms: "food intolerance," "failure to digest food," and "food allergy."

"Food intolerance" is used to mean that the eating of a given usually normal food makes the individual ill. For example, an adult, after a resection of a segment of small intestine, was allowed to eat only cereal and cream for some months. She developed severe diarrhea and multiple vitamin deficiencies. After a time she was given adequate vitamins but continued to have diarrhea. Analysis of her feces showed an excretion of 150 gm. fat per day (about ⅓ lb.) in the form of soap and free fatty acids. The latter are known to be intestinal irritants. A low-fat diet resulted in abrupt cessation of the diarrhea in 48 hr., and she has been well ever since, except when she experiments with fatty foods. This patient was able to split fat, but not absorb it and thus had fat intolerance but not fat allergy.

"Failure to digest food" means that because of lack of normal ferments, a given food appears in the feces unutilized. Eating this food may or may not produce illness. On a normal diet, patients with cystic fibrosis of the pancreas lose about half the fed protein, half the fed fat, and 15 per cent of the fed carbohydrate. Doubling the protein intake increases the protein absorbed without producing ill effects, and improves the patient's clinical condition although it also increases fecal protein loss. Doubling the fat intake results in some increase in absorption but leads to loose stools, incontinence of feces, a subjective sense of indigestion, and an increase in fecal fat. These children have deficient protein digestion, but not protein intolerance; they have deficient fat digestion with moderate fat intolerance. Under six months of age they sometimes fail to

tolerate starch though they absorb sugars well. The older ones do well on a high-protein, low-fat, high-carbohydrate diet, with a high intake of fat-soluble essential substances in the form of eggs and vitamin supplements to compensate for fecal loss, and with pancreatin to aid in digestion.

"Food allergy" implies a sensitivity to food based on something on the order of an antigen-antibody reaction. All of us know people who have indigestion and a rash after eating certain shellfish. One of our children after drinking orange juice immediately had a bright red mark where the glass had touched his face and a few minutes later had a severe attack of asthma requiring adrenalin; soon after he had diarrhea. Less severe forms may have delayed reactions and are sometimes difficult to distinguish from food intolerance from other causes. This distinction is made more difficult by the fact that a positive skin reaction to a food may often be associated with clinical tolerance to that food. We have found few cases of food allergy in this strict sense of the term.

DIGESTION IN CELIAC DISEASE

If we examine the available information as to the processes of digestion in the children with celiac disease we find several abnormalities in spite of the lack of anatomic change. Duodenal amylase derived from the pancreas is absent or present in subnormal amounts. This is the probable explanation for the clinical intolerance to starch and the presence of excess starch in the feces. However, normal amounts of salivary amylase are present, which is perhaps why these children can tolerate Melba toast or zwieback better than cereal—they are more likely to apply the saliva to the toast. In many cases, the gastric juice is deficient in amount, in acid, in capacity to form curd, and in pepsin. The lack of rennet action is a possible reason for their intolerance to whole milk, while junket, cottage cheese, and protein milk are well tolerated. Patients who lack acid tend to have poor digestion of vegetable fibers, and more vegetable particles are visible in their feces.

The pancreatic trypsin and lipase are present, and these children digest protein quite well. Although they are able to split fat, the more severely ill ones cannot absorb all of the fatty acid because of deficient intestinal absorption which is still not understood. The unabsorbed fatty acid combines with calcium so that this, too, is partly lost in the feces. The intestines show various abnormalities of peristaltic movements by X-ray, with areas of dilatation and spasm. The intestinal contents are abnormally acid and contain an abnormal assortment and quantity of bacteria, which are found in the upper small intestine at a site usually sterile. The feces during "good" periods contain an excess of undigested meat and vegetable fibers and of starch; during "bad" periods, there is also excess fat in the form of fatty acids and soaps, some excess of nitrogen, and an abnormal loss of calcium, salt, and water. There is a tendency to hypoproteinemia. Glucose absorption may be delayed, but glucose is tolerated. There is a tendency to a deficiency of one or several vitamins, partly because of loss in the stools and partly because of dietary restrictions. In mild or recovered cases, many of these abnormalities may be lacking. However, a low duodenal amylase and an excess of fecal starch are still present, even after clinical recovery.

DIET THERAPY IN CELIAC DISEASE

The abnormalities are so numerous and complex that we are still in the dark as to the basic hereditary metabolic abnormality. From these and other studies and from clinical trial and error, we now have a regimen of dietary therapy for celiac disease which is usually effective. The principles of this regimen are as follows: The child should receive the following:

(a) An excess of calories. This is to compensate for fecal loss and for past failures in absorption. Usually about 20 per cent above the calculated requirement is adequate.

(b) In a very ill child, feedings should be frequent but small. His absorption is slow, and the food passes rapidly through the intestine. It is often well at first, to feed every 4 hr., day and night, for a few days or weeks, then to feed once between supper and breakfast over a longer period. In older children, an after-school snack should be planned.

(c) An excess of protein. The optimal amount is about 6 to 8 gm. protein per kilogram body weight per day. About 1 gm. of this may be provided as amino acids in the very young or ill patients. A frequent error is to feed only protein food, which results in the child's refusal to finish his meal and in an abnormally high level of non-protein nitrogen in the blood. Meat proteins are especially valuable. Uncreamed cottage cheese and egg are also useful, and older children may have fish and other types of cheese.

(d) A low-fat but not a fat-free diet. Egg yolk and sources of fat-soluble vitamins should be included. As the child improves, moderate amounts of fat may be permitted. This should include small amounts of butter, peanut butter, and boiled dressing.

(e) Simple carbohydrates should provide about one-half of the calories. Sources of simple sugars are glucose, fruit juice, cooked or canned fruits, ripe bananas, and vegetables. Experience has shown that certain fruits and vegetables are tolerated better and earlier than others. Among these are bananas, apples, pears, and grapes, which may also be given raw to older infants; tomato juice, green beans, carrots, squash, and papaya. Cane sugar is not well tolerated by the very ill or very young patient but may be added later. Starch should be avoided until

the child is well on the way to recovery and should be added with discretion.

(f) Vitamin supplements. These should include a wide assortment of B vitamins, including a source of folic acid, pyridoxine, and thiamine; crude preparations are preferable. Vitamins A and D and ascorbic acid should also be supplied.

(g) The allowed foods may be given in any form, as soups, fruit ices, and so on.

(h) Because of wide individual variation, the exact time of adding new foods cannot be standardized. They should be added at intervals of a week or more.

FOODS TO AVOID

The child with celiac disease has intolerance to certain specific foods for reasons we do not fully understand. The following foods should be avoided in younger or ill patients:

(a) Raw or pasteurized milk, including raw skim milk and evaporated milk. However, any form of milk which has been subjected to the action of rennet or prolonged heating is usually tolerated. These children tolerate junket, uncreamed cottage cheese, protein milk, boiled milk (over ½ hr.), and some brands of dried skim milk.

(b) Starch. Young or ill patients fail to tolerate any form of starch. Those slightly more advanced tolerate rice and potato, but wheat and rye are poorly tolerated even late in the course. Recent work in Holland and England (1, 2) has shown that wheat gluten is poorly tolerated, while de-glutenized wheat starch is well tolerated by older children. This is of great practical importance in countries where bread is the chief food. For reasons unknown, soda crackers are less well tolerated than bread, and sponge cake or angel cake are better tolerated than bread and therefore may be permitted earlier and in larger amounts.

(c) Roughage. It is wise to use puréed foods until a later age than for normal children, at least through the second year. Seeds, skins, and raw fruits other than those on the allowed list should be avoided.

(d) Chocolate. Chocolate is poorly tolerated, probably because of its fat content. However, cocoa may be used for flavoring for older children.

DIETARY PROGRESSION

The feeding of young infants suspected of having celiac disease or younger siblings of patients with celiac disease who present a feeding problem may be planned along these principles. Such an infant may require a protein milk formula with added glucose or banana powder.[2] However, it is often possible to use dried skim milk as the basis. Puréed meats, fruits, and vegetables may be begun early. Potato and rice are the first starches to be added, and cereals should be withheld until eighteen months of age or later. Occasional infants fail to tolerate any form of milk and do well on the other allowed foods if calcium is supplied.

It is of interest that an acute respiratory infection will lower the child's tolerance to foods. During a cold and for the following week, it may be necessary to return to a diet more strict than that to which the child had advanced. Oral antibiotics, especially sulfadiazine or penicillin, may control the situation rapidly.

The symptoms resulting from a deviation in diet vary with the age and condition of the child. A child in the second or third year who has recently recovered from the severe phase, after enjoying some illegal bread or saltines, may in a few hours or perhaps next morning become extremely irritable, have abdominal distension and sometimes gas and pain, and pass a few loose stools. An older child will tolerate excesses for a period of weeks but will tend to gain poorly, lack energy, and have abdominal pain at night. He may not have abnormal stools until his next respiratory infection.

The diets for celiac disease and fibrocystic disease are essentially the same in their initial or critical phases. The difference lies mainly in the rapidity of progression, in the tolerance of starch, fat, and roughage, in the return to a more normal type of diet, and in the pancreatin given to the fibrocystic children. There are many factors influencing the planning of the diets. These include such factors as the clinical picture of the child, length of illness, and the social-economic status of the family. The dietitian must also suggest methods of food preparation and be ready to help the mother adapt the menus to the family patterns. There is the additional challenge of obtaining an accurate evaluation of the dietary history and dietary observances, for the families frequently have chronically dominant emotional factors that have a great influence.

SUGGESTED DIETARY PLANS

It is virtually impossible to present specific details in an article, but suggested dietary plans may serve as a guide. The diets as used in Babies Hospital fall into four general groups, although they are modified for the individual child. The *first group* is a "strict, no-starch, high-protein, low-fat" diet. It is used in the initial phase of the disease for young infants. The foods include such items as minced or strained canned beef or liver, applesauce, scraped raw apple, ripe banana, uncreamed cottage cheese, egg, gelatin, strained green beans, carrots, or squash. The diet is then liberalized to the *second group* which is a "no-starch, high-protein, low-fat" diet and includes a greater selection of minced meat and puréed foods—fruits and vegetables—and in addition,

[2] "Probana," a preparation composed of protein milk, protein hydrolysate, glucose, and banana powder, devised for feeding infants with pancreatic deficiency. Prepared by Mead Johnson & Company.

miscellaneous simple carbohydrates. This diet is usually indicated under one year of age and is continued until approximately eighteen months to two years. It may also be used for the older children who are clinically not doing well. These older children frequently can tolerate chopped foods on this "no-starch" phase. Since this phase is often a difficult one for which to plan meals, a suggested outline follows:

BREAKFAST

Strained orange, grapefruit, or tomato juice
Ripe banana or other fruit from list
1 or 2 eggs, prepared without added fat
Uncreamed cottage cheese if desired (jelly or honey may be added)
Milk or formula:
Note: If egg and cheese are temporarily refused, meat may be used. One need not be bound by convention.

DINNER AND SUPPER

Finely ground lean meat, poultry, or fresh fish if tolerated. Broil, boil, or roast only.
And/or uncreamed cottage cheese or egg may be used for *one* of these meals.
Strained or chopped cooked vegetable
Dessert: strained or chopped fruit, gelatin, junket, or custard
Milk or formula

The quantity of food should be determined by the appetite of the individual child. These children frequently have very large appetites as they improve. Breakfast seems to be one of the most difficult meals for the mother to plan. There may be concern demonstrated because cereal, which is thought by parents to be the "staff of life" and a necessary breakfast food, is omitted. Such psychologic attitudes are often strong enough to influence the child. After evaluation of the status of the child, the clinician may allow 1 to 2 Tbsp. puffed corn or rice cereal. There is not enough starch present in this amount to influence a child who is progressing well, and the psychologic satisfactions more than compensate.

With clinical improvement, the *third group* may be indicated. This is the "low-starch, high-protein, low-fat" phase. From our experience, the following starches are tolerated and may gradually be introduced. They should not exceed a total of three servings in the day.

Zwieback
Melba toast
Crisp toast
2 or 3 arrowroot crackers or social tea biscuits

The following additional foods are suggested for this phase of the disease:

VEGETABLES

Cooked, Fresh or Frozen, Canned

Asparagus
Beets
Broccoli tops
Carrots
Cauliflower tops
Peas
Spinach
String beans
Squash
Swiss chard
Tomato juice

FRUITS

Raw

Apple, peeled, thin sliced
Banana, *ripe*
Pear, ripe, peeled, thin sliced

Juices

Apple
Apricot
Grape
Grapefruit
Lemon
Orange
Pineapple

Cooked or Canned

Applesauce
Apricots
Cranberries, strained
Peaches
Pears

MEAT, FOWL, FISH

(*Lean—Broil, Boil, or Roast*)

Beef
Chicken
Fish, fresh
Heart
Kidney
Lamb
Liver
Salmon, canned
Shell fish (after 2 years of age, with caution; a common allergen in this group)
Tuna, low-fat canned
Turkey
Veal

MISCELLANEOUS FOODS

Candy, hard; lollipops, gum drops; marshmallows or sauce
Cottage cheese—no cream
Cocoa
Dates, if tolerated
Eggs—not in excess of 3 daily
Fruit ice
Gelatin
Jelly—no seeds or skins
Junket powder
Milk—boiled skim or homogenized, as tolerated
Raisins, if tolerated
Salt
Sugars, honeys, sirups
Vanilla and other flavoring extracts

With improvement, the diet is gradually liberalized to *group four*, the "moderate-starch, high-protein, low-fat" diet. It is suggested that each new starch be added one at a time and the tolerance checked carefully. Suggested starches are:

Potato
Rice

Cereal—puffed, flaked type, progressing to cooked (non-wheat or rye initially for celiac patients)
Angel cake, sponge cake, or lady fingers
Popcorn—no oil

The following additional starches, because of their wheat content, are frequently poorly tolerated by the celiac group and should be added with caution and used in moderation in the progression to a normal diet:

Bread, untoasted; bagels; rolls
Macaroni
Noodles
Spaghetti

PROGRESSION TO A NORMAL DIET

Additional raw fruits and salads are added. As the transition to a normal diet occurs, the requirements for the celiac patient are essentially the same as for a normal child. Foods from the family meal plan are introduced by trial and error for individual variations will occur. The quantity of food eaten should be unrestricted, provided the excessive use of starch is avoided. Occasionally it is necessary to use fat with moderation. B-complex supplementation should be continued. The intake of vitamins A and D is the same as for a normal child.

The child with fibrocystic disease presents a different dietary pattern with the progression to a more normal type of diet. The nutritional requirements are increased about 50 per cent above the normal. Fat is permanently restricted. Starch is tolerated earlier and in larger amounts and need not be restricted for the older child, unless it is used in place of other important food essentials. Between-meal feedings are necessary. Often these children do better on six small meals a day. The pancreatin should be given three times a day.

SUMMARY

Study of the cases of chronic indigestion and malnutrition seen in the Babies Hospital during the past fifteen years has shown that the largest group is formed of those with mild or severe celiac disease. The second group is formed of those with an anatomic or infectional basis for their disease, cystic fibrosis of the pancreas being the most frequent. Cases in which disease resulted from inadequate feeding alone are few. A distinction between food intolerance, failure to digest food, and allergy is made.

Cystic fibrosis of the pancreas is briefly described as a familial disease affecting a number of glands of the body, but most consistently the pancreas, resulting in pancreatic deficiency present at birth in most cases. These children have a tendency to bronchopneumonia. The general growth and resistance to infection are greatly improved on a diet designed to provide adequate nutrition in the absence of pancreatic secretion.

Celiac disease is briefly described as a severe form of indigestion occurring in children of families with a high frequency of digestive difficulties. The known defects in digestive physiology are briefly stated. The principles of diet therapy, both for celiac disease and for cystic fibrosis of the pancreas, are summarized, and an outline of the dietary regimens used in the Babies Hospital Celiac Clinic is presented. The diets for the two diseases are similar in being high in calories, protein, and various vitamins. There is greater emphasis on restriction of fatty foods in pancreatic deficiency and on avoidance of starches in patients with celiac disease.

CITED REFERENCES

(1) DICKE, W. K.: Coeliakie. Thesis. Utrecht, 1950.
(2) ANDERSON, C. M., FRAZER, A. C., FRENCH, J. M., GERRARD, J. W., SAMMONS, H. G., AND SMELLIE, J. M.: Celiac disease: Gastro-intestinal studies and the effect of dietary wheat flour. Lancet 262:826, 1952.

OTHER REFERENCES

(1) ANDERSEN, D. H.: Cystic fibrosis of the pancreas and its relation to celiac disease. Am. J. Dis. Child. 56: 344, 1938.
(2) ANDERSEN, D. H.: Celiac syndrome. 3. Dietary therapy for congenital pancreatic deficiency. Am. J. Dis. Child. 70: 100, 1945.
(3) ANDERSEN, D. H.: Celiac syndrome. 6. The relationship of celiac disease, starch intolerance and steatorrhoea. J. Pediat. 30: 564, 1947.
(4) ANDERSEN, D. H., AND DI SANT'AGNESE, P. A.: Idiopathic celiac disease. 1. Mode of onset and diagnosis. Pediatrics 11: 207, 1953.
(5) DI SANT'AGNESE, P. A.: Idiopathic celiac disease. 2. Course and prognosis. Pediatrics 11: 224, 1953.
(6) MAY, C. D.: Cystic Fibrosis of the Pancreas in Infants and Children. Springfield, Ill.: Charles C Thomas, 1954.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Ancient Romans Frozen Asparagus

The ancient Romans were the originators of frozen foods, according to J. Roger Deas, Pacific Division, American Can Company. He relates that one of the delicacies served at the Feast of Epicurus in 97 B.C. was frozen asparagus. "The Roman historian, Cato, tells in his writings how asparagus, grown along the River Tiber, was picked in season and rushed by chariot and fast runner to the snows of the Alps for preservation. Then, at the Feast of Epicurus, six months later, the asparagus was rushed back to Rome, after being well preserved in the mountain snows."—*From Quick Frozen Foods 17: 158 (February), 1955.*

"Simple" Obesity: A Current Review[1]

GEORGE H. BERRYMAN, M.D.[2]

Head, Clinical Investigation, Abbott Laboratories, North Chicago, Illinois and Clinical Assistant Professor of Medicine, University of Illinois, College of Medicine, Chicago

STATISTICS have shown that among the obese there is increased mortality (1). Conversely, weight reduction by substandard insurance policyholders has been associated with a significant decrease in their expected mortality rate (2). Levy and co-workers (3) reported the number of retirements among obese Army officers to be one and one-half times the expected rate. Obesity is often associated with certain diseases, notably hypertension, heart disease, and diabetes mellitus (3–6). Short (7) reported a higher incidence of abnormal electrocardiograms in those who were 25 per cent overweight or more. Simonson and Keys (8) reported a number of abnormalities in electrocardiographic surveys of obese men compared to lean. Conversely, in Green's series (9), half of the obese hypertensives who reduced became normotensive. Studies by Brozek, Chapman, and Keys (10) indicated that weight loss in either normotensive or hypertensive individuals will result in a decline in both systolic and diastolic pressures, even without sodium restriction.

Obesity has been associated with morbidity from other causes. It usually accompanies gall bladder disease (11). Postoperative embolism and thrombosis have been reported to occur more frequently in obese women (12). Asthma and bronchitis carry higher mortality risks when the patient is overweight (13, 14). Postural changes in obesity impair circulatory and respiratory efficiency (15, 16). Corpulence complicates the prognosis in both heart disease and arthritis. It has been suspected that obesity favors atherosclerosis. Pregnant obese women are likely to encounter difficulty (17). In short, obesity appears to compromise both health and longevity. With the increasing importance of degenerative disease as a leading cause of death, leanness would appear to be an asset. Even in the absence of disease, obesity imposes its penalty of unattractiveness, shortness of breath, intolerance to heat, and excessive perspiration.

Although causal relationship to disease has not been demonstrated decisively, obesity ought to be rare if only because of its predilections. However, estimates of its occurrence go as high as twenty million. The persistence of obesity is perhaps even more impressive than its incidence. Kurlander's follow-up findings (18) after completion of group therapy for reduction showed only eight out of ninety-five patients attained long-term appreciable reduction at the end of one year. At the end of two years, four of these had relapsed. Other reports are in similar vein. Fellows (19) reports that one year after completion of a reducing program, 68 per cent had regained an average of 18.3 lb., and for the whole group, 85 per cent of the weight lost during original treatment had been regained at the end of five years. Harvey and Simmons (20) point out that at least half of their group therapy patients had been overweight for about twenty years, even though 92 per cent had made two serious attempts to lose weight. In all, 87 per cent had found it difficult either to reduce or to maintain their success. Gray and Kallenbach (21) commented on the need for continued vigilance to prevent relapse. Realization that people who have reduced frequently do not stay reduced prevents light dismissal of the obesity problem as a matter requiring simple caloric subtraction. Long-term results, together with information derived from animal and clinical investigation, indicate that genetic, metabolic, neurosomatic, and psychosomatic relationships may be involved either individually or in combination.

OBESITY DEFINED

What is meant by being fat? Brozek and Keys (22), among others, have drawn attention to the more precise meaning of fatness. It is not avoirdupois in the ordinary sense of excess weight determined on a balance. Mayer and Stare (23) have used the apt analogy of the 200-lb. football lineman who is not

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 28, 1954.

[2] The author wishes to acknowledge with gratitude the diligent library research and checking of data done by Geneveve Ames, which greatly facilitated preparation of this manuscript.

fat, despite his deviation from "ideal" weight for height and age.

There has been developed a water-immersion method of estimating fatness by determining the body's specific gravity (24), based on the fact that fat has a density of 0.92, while that of the rest of the body averages 1.1. Other methods for arriving at the "lean body mass" or active tissue (in contradistinction to fat) involve estimation of body water, which is related in rather constant fashion to lean body mass. Skin calipers also provide a means of estimating fatness by measuring thickness of the skin. By these techniques it has been shown that body fat in men of "normal" weight increases with age. Muscle and other active tissue is partially replaced by fat, and in addition, fat depots tend to increase.

These findings suggest that a critical scrutiny of reference tables of "ideal" weight may be in order. It appears from these recent data that older individuals, because they have less "active muscle mass," require less calories than younger individuals of the same weight. It also seems likely that sex differences in caloric requirements may be a function of active muscle mass.

WHAT DETERMINES OBESITY?

Does obesity occur simply because principles of caloric input and output are ignored, or because there are more basic factors which the individual cannot control, or can control only temporarily and with difficulty? The last-mentioned is implied in a report suggesting that certain obese children may eat less and be less active than their non-obese playmates (25). It is also implied in articles (26, 27) referring to genetic, traumatic, and environmental causes of obesity. Bleisch and co-workers (28) demonstrated in certain mice a type of obesity inherited as a simple Mendelian recessive trait, with associated diabetes mellitus and insulin resistance. Harvey and Simmons (20) reported that each of their obese patients had an average of 3.5 obese members in their immediate families—grandparents, parents, siblings, and children. Both Gurney (29) and Angel (30) have discussed the importance of heredity and constitution as (a) dominant factor(s) in the development of obesity.

Mayer (26) has investigated the metabolic differences between mice made obese by gold thioglucose and those whose obesity was attributed to the "hereditary obese hyperglycemic syndrome." The latter were reported to show a hyperglycemia markedly resistant to insulin, a hypercholesterolemia, and an over-secretion of a hormone produced by the alpha cells of the pancreas. It was suggested that pituitary growth hormone exerted a trophic effect on the latter. These findings have been interpreted as indicating a possible genetic etiology of obesity. Obesity induced by gold thioglucose was considered to be a prototype of "traumatic" obesity. Here there were none of the metabolic characteristics found in the hyperglycemic type. Another paper (31) describes metabolic differences according to the phase of obesity. Adult females designated as being in the "active" (rather than "static") phase of obesity, were found to have increased tolerance for carbohydrate after ingestion of self-selected meals, and also after administration of glucose.

Mitchell (32) suggests that ease of maintaining stable body weight and stable content of reducible fat stores is greatly influenced by somatotype. He considers that the efficiency of the homeostatic mechanism is greater in ectomorphy (wiry slender type) than in endomorphy (round soft type). He implies that the endomorph must be at great pains to avoid injudicious food habits, if he is to avoid the obesity which is a frequent complication of his body build.

Differences in distribution of fat are cited as providing further evidence of diverse etiology of obesity (33). Thus, in "gynoid" obesity, the fat appears chiefly in the lower trunk and limbs. This contrasts with "android" obesity—where the adiposity of the upper trunk, a plethoric appearance, decreased activity, and a tendency towards hypertension, decreased glucose tolerance, and renal disease—are all distinctive. Other characteristic fat distributions can be recalled in well known endocrine diseases. These examples all support the possibility that excess caloric intake may only reflect underlying genetic, metabolic, neurosomatic, and/or psychosomatic abnormality.

POSSIBLE RELATION OF CENTRAL NERVOUS SYSTEM

By use of electrodes, a relationship has been demonstrated to exist between certain hypothalamic nuclei and control of appetite in animals (34). The hypothalamus forms the floor of the third ventricle and lies in the diencephalon, one of the oldest parts of the brain from the phylogenetic and ontogenetic points of view. The hypothalamus functions for integration of highly important visceral and somatic reactions. It is involved in regulation of body temperature, water metabolism, carbohydrate metabolism, fat metabolism, sexual function, body activity, and sleep (35). Recent reports (36) describe marked effects on the appetite of animals following damage to certain hypothalamic nuclei. Lesions in the ventro-medial nuclei were followed by hyperphagia. If simultaneous or subsequent lesions were produced in the lateral nuclei, anorexia occurred instead. These results were interpreted as indicating that the lateral hypothalamic nuclei act as a "governor" on those lying medially.

Antedating such efforts to localize the appetite-controlling areas of the brain have been the many attempts to determine the humoral factors responsible for setting the machinery in motion. The earlier theories, devoted mostly to an explanation of

hunger, concerned stimulation of afferent nerves by changes in the tissues, or of a local group of sensory nerves in the walls in the stomach, and of a hunger center in the brain under the influence of a starvation state of the blood. These pathways of hunger sensation are reviewed by Carlson (37). For many years it was assumed that hunger was experienced whenever emptiness-induced contractions of the stomach sent impulses to the brain, and Bulatao and Carlson (38) suggested that hypoglycemia was the specific signal to the brain responsible for such hunger sensations. However, doubt was cast on any exclusive influence on hunger and appetite by the stomach when it was demonstrated that denervation and removal did not alter the characteristics of food intake. Scott *et al.* (39) could not correlate spontaneous fluctuation in blood sugar levels with change in appetite. Further, diabetic hyperphagia and hunger diabetes were unexplainable on a hypoglycemic basis.

The search for the "feedback" mechanism (36) was continued in other areas. Cowgill (40) and Adolph (41) both suggested that caloric content of food governs food intake of animals. Quite recently Janowitz and Hollander (42), reporting on studies of gastric fistula in dogs, have advanced evidence that caloric homeostasis is one of the important regulatory mechanisms. Booth and Strang (43) reported that onset of satiety from food coincided with a rise in skin temperature, and this in turn, had definite similarities to the time course of specific dynamic effect. Brobeck (44) observed that alteration in dietary content of protein, fat, carbohydrate, bulk, or water resulted in little change in the calculated specific dynamic effect, although other aspects of food intake were affected. This thermostatic concept of appetite control was teleologically feasible because of the presence in the hypothalamus of temperature-sensitive cells.

OTHER POSSIBLE APPETITE REGULATORS

As in the case of hypoglycemia, the theory that body heat acts as an exclusive regulator of appetite is also considered to have certain shortcomings. Hyperthyroidism, involving definite intolerance to heat, is nevertheless accompanied by hyperphagia. Thyroidectomy, by either medical or surgical means, usually reduces the voracious appetite of the hyperthyroid state. Appetite induced by insulin administration appears to be independent of heat relationships. Further, Mayer and Greenberg (45) reported that the central temperature of hyperphagic animals was higher than that of those non-hyperphagic.

One of the mechanisms recently suggested as a signal to the hypothalamus is the degree of difference between arterial and venous blood glucose levels. This is the central point of the glucostatic theory advanced by Mayer and associates (46). The underlying concept is that fluctuations in appetite must be related to an equally fluctuating blood constituent derived from the diet.[3] Blood glucose, rather than lipids or amino acids, so qualifies. "Glucoreceptors" are known to exist within the central nervous system; the insulin test after vagotomy presumably derives from their presence. Decreased utilizability of blood glucose (rather than hypoglycemia *per se*) is postulated to be responsible for increased appetite leading to obesity. It has been suggested that interference with phosphorylation of glucose, involving a hexokinase reaction, results in lowered utilization of glucose by the nervous system. In any event, narrowing of the arterio-venous difference in blood glucose is considered to be a specific stimulus to the hypothalamus, leading to re-attraction to food, or appetite. When the "delta-glucose" falls below 15 mg. per 100 ml., the individual feels hungry. Data obtained from normal, obese, and diabetic subjects were presented (26) in support of this concept. Although such data have not yet been confirmed independently, there are certain interesting aspects of such a concept. Thus, epinephrine, by increasing arterial blood sugar and reducing it peripherally, is said to result in carotid-jugular differences in blood glucose sufficient to account for reduction in appetite. Insulin hyperphagia is considered to arise from carbohydrate deprivation and subsequent decline in delta-glucose. A similar mechanism of metabolic hypoglycemia could be responsible for the hyperphagia of hyperthyroidism.

Brobeck (47) considers several factors may be involved in the control of appetite, including movement of water, environmental temperature, availability of glucose, and distention of the stomach, among others. In contemplating the flow of digestive juices which occurs after eating, he asks if dehydration might not serve as one of the signals to the hypothalamus. Possibly compatible with this idea is his observation that salt, without water, has definite satiety value. Hollander, Sober, and Bandes (48), working with a human sham-feeding subject (with a jejunostomy for alimentation), obtained evidence that at least two factors operate in control of appetite: (a) homeostasis of calories and (b) a wholly neural mechanism independent of nutritional need. They suggest that oropharyngeal aspects of eating are more important than is commonly realized. This concept of multiple control mechanisms was subsequently confirmed by Janowitz and Hollander (42) in dog experiments. Grossman (49) has considered that impulses from any of the following areas or physiologic processes might be active in the satiation of appetite: oropharynx; gastrointestinal tract; digestion and absorption;

[3] More recently, this concept has been modified by the originators to include a lipostatic mechanism for long-term control of appetite. The glucostatic theory appears to be limited in its applicability to short-term aspects.

circulation of nutrients in the blood; and extraction from blood of nutrients by the tissues.

METABOLIC FACTORS CONTROLLING FAT

Adipose tissue is often assumed to be physiologically passive, responding only to changes in energy balance. This "coal-bin" concept is incompatible with data such as those of Wertheimer and Schapiro (50) and Schoenheimer and Rittenberg (51) which demonstrate the dynamic characteristics of body fat. Wertheimer and Schapiro (50) have presented evidence suggesting neural and hormonal control over mobilization and deposition of fat. Gersh and Still (52) have described the vascular supply of adipose tissue as richer than that of muscle. Portis (53) has shown that the rabbit omentum is able to form antibodies, coincident with the appearance of aggregates in its reticulo-endothelial cells. These and many other properties of fat tissue have been reviewed (54).

One explanation for hypothalamic obesity is a decreased utilization of the energy stores of the body. The term "lipophilia" is descriptive of the tenacity with which the obese frequently conserve their stores of fat, despite restriction of caloric intake below output. A retarded mobilization of fat has been reported to occur in mice with hereditary obesity. Salcedo and Stetten (55) reported that although new formation of fat was not impaired in obese animals, they did, nevertheless, burn less quantities of depot fat. Obesity could possibly occur, therefore, on the basis of retarded catabolism of fatty acids. Energy and carbohydrate needs, not satisfied from this source, would then require an exogenous supply; hence, increased appetite and subsequent obesity would result.

Increased lipogenesis, rather than difficulty in utilization of stored fat, has been suggested as another possible cause of obesity. On this basis, Pennington (56, 57) has suggested than a high-protein, high-fat, low-carbohydrate diet prevents accumulation of pyruvic acid, thereby favoring utilization of the fat stores of the body. The opposite of lipogenesis is achieved, and therefore obesity is prevented or reversed.

"Hyperinsulinism" is another factor that could conceivably contribute to altered lipid metabolism in obesity. Theoretically this could arise from increased islet beta cell secretion, or an imbalance in ratio between that secretion and its alpha cell antagonist. Mayer (27) has suggested that in animals of the hyperglycemic obese strain, there is such a secretion responsible for insulin resistance and hyperglycemia. Furthermore, radioacetate incorporated into the diet of these animals underwent more complete utilization than in non-obese strains.

Hyperinsulinism as an etiologic factor in obesity has been suggested on entirely different grounds (58). The fatigue and consequent inactivity and obesity found in the neurasthenic syndrome have been reported to be accompanied by a peculiarity of carbohydrate metabolism. This is evidenced by a flattening of the intravenous glucose tolerance curve. The neurasthenic syndrome consists of "apathy, loss of zest, and a general let-down feeling of aimlessness and revulsion against the routine of everyday life, be it occupational or household duties." It is accompanied by chronic fatigue, which is most marked in the afternoon. The evening meal relieves this fatigue syndrome. Data have been presented to support a thesis that the subnormal glucose levels observed after intravenous glucose (flattened glucose tolerance) are corrected by prior use of $\frac{1}{150}$ grain of atropine sulphate hypodermically. These findings were interpreted as being indicative of autonomic imbalance, causing hyperirritability of the right vagus, with consequent hyperinsulinism. The basic factor underlying this cycle was thought to be emotional stress, which, by exerting an effect on the hypothalamus, produced changes in the autonomic nervous system. Atroprine, with its anti-parasympathetic effects, was believed to have interrupted the cycle, and, together with psychotherapy, was reported to have returned patients to near normal. Although the use of atropine for these purposes is controversial, it is of interest to note that the hypothalamus is the central point of the concept.

The possible role of hyperinsulinism may also be suggested by the observation that exercise reduces the insulin requirement in diabetes (59). Thus, inactivity, besides contributing directly to a positive caloric balance, perhaps could also be involved by favoring a transient or sustained hyperinsulinism.

A study of metabolic pathways shows many ways whereby mobilization and production of fat may be affected. A skeleton sketch of the tricarboxylic cycle (*Fig.* 1) is indicative of the fulcrum position of pyruvate and of the potentialities of fat synthesis from all three classes of food. The possible influence of various endocrine secretions is also shown. To be weighed against the concept of diverse sources of body fat is the conclusion of Forbech (60) that the fattening process in the human being results predominantly from direct transfer of dietary fat, since a respiratory quotient exceeding 1 is seldom observed.

PSYCHOSOMATIC ASPECTS

Concepts of appetite control by exclusively neural, hormonal, or metabolic factors are not accepted without reservation in some quarters. Convincing explanations of obesity on psychosomatic bases can be presented. Unconscious motivation to overeat may be important as a means of vicarious satisfaction. According to this concept, food becomes a symbol. It is a source of emotional "input" similar to satisfaction derived from doing a job well, from

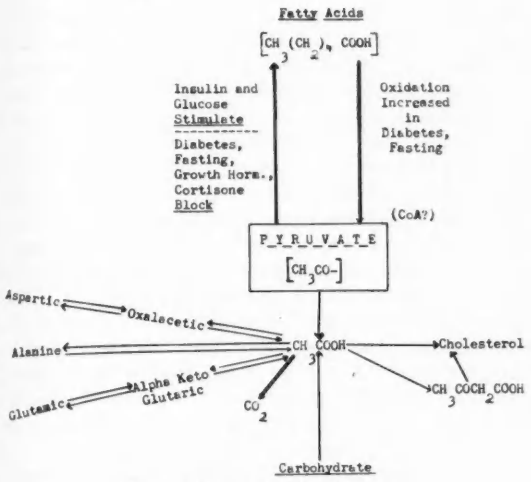


FIG. 1. *Tricarboxylic acid cycle.*

receiving recognition, from acceptance in society, and from reasonable dependence on and independence from fellow men. Denial in any of these sectors may result in compensatory increase in another. When compensation for feelings of pressure, uncertainty, failure, frustration, anger, envy, and so on, take the form of "oral gratification," long-term intractable obesity or relapse from dietary control may result. Harvey and Simmons (20) report that more than half their obese patients were able to relate the onset of their obesity to some such incident as pregnancy, illness, operation, marriage, puberty, menopause, change of environment, or nonspecific emotional and social difficulties.

Brosin (61), in an able discussion of the psychosomatic and psychiatric aspects of obesity, quotes: "Imprisoned in every fat man, a thin one is wildly signalling to be let out." In a more recent article (62), he points out that weight reduction in middle age may be impossible if substitute satisfaction is not available to replace overeating caused by emotional needs. Richardson's statement (63), "she eats as if to fill a boundless void" has been likened by Waife (64) to the void of the inner life of many individuals. A concrete example of this situation may be seen in advertisements such as that on a local elevated-station platform: "Are you lonesome? Have a date with ——'s country-fried chicken with dumplings and waffles (and honey), topped off by our luscious oven baked, fresh apple pie." Weiss (65) has also presented the psychosomatic aspects convincingly, pointing out the significance of certain foods in terms of regression to childhood, or as a fetish, or as a self-reward. Freed (66), from interrogation of five hundred obese patients, reported three-fourths were aware of eating more frequently when nervous or worried. An additional one-fifth felt that being idle, bored, or tired was an important stimulus to eat. Other examples of the compensatory function of food may be seen in excessive intake deriving from unconscious desire for affection, as an antidote to depression, as a symbol of independence, and as a means of avoiding responsibility. Hamburger (67) proposed that his patients who overate could be divided into four groups:

(a) Those responding to nonspecific emotional tensions.

(b) Those obtaining substitute gratification in difficult life situations.

(c) Those with underlying depression or hysteria.

(d) Those "addicted" to food.

Many, therefore, feel that any reducing regimen which does not include efforts to solve underlying emotional difficulties is doomed to failure. In many respects, overeating may be similar to alcoholism; transport from reality is common to both. Thus, temporary reduction in weight may be accomplished by one reducing regimen or another, but eventually there is a relapse when the need arises anew for refuge from life's exigencies. According to this approach, "to be obese or not to be" is determined by failure or success in the rational solution of emotional problems. Failure and continued flight from reality can be reflected in obesity just as in alcoholism. Motivation, therefore, becomes the key to the problem. Waife (64) has emphasized that without proper motivation, the obese cannot avoid continuing obesity.

POSSIBLE INTERPRETATION OF DATA

The fact that mere speculation on the causes of obesity is now being amplified by clinical and laboratory investigation is encouraging and highly desirable. As frequently occurs during the unfolding of many facets to a problem, however, it is difficult to integrate some of the information. Some alternatives for interpretation are:

(a) To consider that many of the results are laboratory curios which have no real counterpart in the human obesity problem. (Analogy: piqûre diabetes in the animal is unrelated to human diabetes mellitus.)

(b) To consider that many of the data relate to an artificially isolated portion of the obesity cycle. Thus, while the hypothalamus may play an important integrative role in relation to appetite, both experimental lesions in the hypothalamus and experimentally devised changes in "signal" involve only part of a cycle; they may be selected phases artificially isolated. (Analogy: vagotomy has a definite effect upon gastric secretion and motility and may effect cure of peptic ulcer. However, no one questions the frequent pre-existence of the "ulcer personality" in the individual developing the ulcer and the importance of factors such as stress, dependence, anxiety and so on, in producing eventual clinical manifestations.)

(c) To consider that human obesity arises from

multiple etiologies, prototypes of which are only now being discovered experimentally.

(d) To consider that, within certain limits, these various etiologies may be significant, but that in human obesity they are overshadowed by factors primarily affecting the intake and output of calories.

SOCIAL VALUE OF FOOD

Regardless of which approach may be used, it is necessary to consider fully the environment in which obesity has developed into a major problem of public health. It is difficult to ignore the social and recreational factors which favor an intake of calories considerably beyond that required for maintenance of normal body function and satiety of hunger. Food's "extra-nutritive" functions are legion. Food (and other sources of calories, such as alcohol) performs a definite social function. It provides a common meeting ground to bridge the gap between strangers; it is something "to do"; it is a catalyst for smooth conversation, gaiety, and successful gathering. Not to nibble and not to imbibe are considered anti-social.

In addition, food is also conventional to the spectator role. Its use accompanying attendance at theaters, movies, and stadiums provides the purveyor almost as lucrative a financial return as the event itself. Its use in the home by the television viewer has approached the proportion of a conditioned reflex. Casual intake of food and beverages has become almost synonymous with relaxation and entertainment.

It is interesting to speculate on this use of food as part and parcel of relaxation and leisure, or of relief from fatigue, fear, worry, and frustration. This has a conceivable counterpart in the "sham rage" which can be elicited in the decorticate (or hypothalamic) animal. With removal of the normal inhibition of the cortex over the hypothalamus, the basic impulses arising in the hypothalamus can find expression. One may ask, therefore, do we voluntarily remove cortical inhibition of the hypothalamus when we eat for such "extra-nutritive" purposes? Do we, in short, let ourselves go? Conversely, instead of withdrawal of cortical inhibition, is there rather a volitional drive to consume extra food as part of the process of enjoyment? In psychosomatic terms, the problem would appear to have these two possible explanations—removal of inhibitions and need for vicarious emotional input.

In considering the possible factors involved in obesity, the important role that familial food and behavior habits play must be appreciated. This is evident from reports such as that of Harvey and Simmons (20), describing a high familial incidence of obesity. Gurney (29) has reported a higher incidence of obesity in parents of obese patients compared to those of the nonobese. On the other hand, it is questionable to carry the hereditary concept to the extreme of suggesting (30) that psychologic instability is characteristic of specific body build (endomorphy). Certainly this would not be deduced from a scrutiny of the body build of psychiatric patients, nor would it seem to be supported by the multilateral etiology of psychopathology. However, whether eating habits are acquired or hereditary, it is axiomatic that eating and drinking are popular because we "feel good" afterwards; we are less fatigued, less worried, and more capable of coping with problems. Frustrations and disappointments are less keen after satisfying the appetite. Food seems to provide relief from stress and from disturbing emotions, and it is often the means of transport from reality. One of the most striking evidences of this function is seen when an individual decides to give up tobacco. Now bereft of this means of relieving tension, and of this accompaniment of relaxation, he frequently becomes obese. "Orexia nervosa" is an apt description.

Last (but perhaps first in importance), the availability and apparent harmlessness of extra food contribute to obesity. When food is difficult to obtain, obesity is not a major problem; certainly, its extranutritive uses are curtailed. Besides these factors which invite indulgence, the type of food used for purposes of enjoyment, release, or relaxation is all too frequently high in calories, low in bulk, and being highly refined, low in protective and tissue-building nutrients. These factors all favor a steadily positive balance of energy input over output.

ENERGY OUTPUT

What of another aspect of energy balance—decreased output? This, too, deserves attention, particularly in this era of mechanization. This is the age of ease, of avoidance of effort. Moving stairs, electrical household gadgets, convenient transportation, easy payment plans (for automobiles, in particular) all favor the least expenditure of effort. In the middle-aged and elderly, the mistaken belief that avoidance of even slight exertion favors intact coronaries contributes to an ever increasing physiologic surplus of calories.

Decreased activity appears to play a significant role in the development of experimental obesity. Mayer (68), in discussing the "hereditary obese-diabetic" strain of mice, points out that those animals which were active showed a weight gain of only 30 per cent above nonobese strains. A 200 to 300 per cent weight gain was observed in similar, but sedentary mice.

While the keynote of reducing regimens is usually a decrease in energy intake, energy output cannot be entirely disregarded, in spite of the discouraging ratio that exists between the energy cost of exercise and the energy store in a pound of body fat. Moreover, it is usually believed that increased appetite unavoidably follows increased activity and that the

ultimate result will be an increase in caloric intake far beyond the exercise expenditure. This need not be true. Moderate exercise can play a significant role without increasing appetite. By walking part or all of the distance to work, for example, 5000 extra calories per month could be expended. This exceeds the calculated caloric value of a pound of body fat. Best (69) has reported from studies of soldiers who were losing weight that the caloric equivalent per gram of weight lost is calculable as 6.8 calories, or about 3100 calories per pound. Besides facilitating the attainment of a negative caloric balance, moderate exercise avoids the sedentary state which may indirectly contribute to obesity by other mechanisms, such as boredom, introspection, and so on. The combined effect of moderate exercise and moderate dietary curtailment is hardly inconsequential. For many individuals, these measures alone would suffice to prevent "middle-age" obesity.

AVOIDING OBESITY

What can be said of the specific means often utilized to avoid obesity? (a) We can dismiss without undue delay those remedies which are advertised as permitting unlimited indulgence in food. One simply cannot ignore the laws of intake and output if he desires to reduce. (b) It is now generally conceded that thyroid should not be used for treatment of obesity, except in those cases where hypothyroidism can be demonstrated. It is not only potentially dangerous when used indiscriminately, but eventual accommodation to increasing dosage often makes it ineffective. (c) Nor are short-term rapid-reducing plans a permanent solution, although they may perform a useful function of convincing a discouraged or dubious patient that he, as an individual, can reduce, and that he was not "intended" to be fat. (d) The role of bulk agents has declined somewhat in recent years, but these are of value for diverting attention from high-calorie snacks.

Recent newspaper and magazine advertisements have assured the lay public that the intake of frequent small amounts of sugar can prevent obesity. This claim is based on the theory that a glucostatic mechanism controls appetite.[4] While this theory is an interesting possibility, it admittedly requires further study and independent verification. Some recent data seem incompatible with the theory. Fryer and associates (70) found that the diet which produced the greatest feeling of satiety in their patients (a low-carbohydrate diet) also produced the smallest arteriovenous blood glucose difference. Conversely, the diet producing the highest delta-glucose produced the least satiety. Another investigator (71) has reported no effect on hunger in subjects in whom hyperglycemia was produced by intravenous glucose, but he did note inhibition of hunger upon entry of food into the cardiac and fundic areas of the stomach. Grossman (49), studying the return of normal appetite 2 to 3 hr. following an average breakfast, found that intravenous and intragastric glucose produced essentially no effect which was different from that of saline administered in the same fashion. This was observed even though the arteriovenous blood glucose difference was manifestly increased by the oral or intravenous glucose in contrast to the saline. He also reports that the number of calories consumed was affected no differently by administration of intravenous glucose or saline.

The suggested use of sugar for control of appetite may be questionable not only intrinsically, but also on grounds of nutritional, dental, and physiologic implications: (a) Extra calories derived from sugar can be expected to displace foods which provide vitamins, minerals, and protein.[5] (b) Extra sugar may favor increased dental caries, according to a possibility which has long been suspected, and recently affirmed in a report of the American Dental Association (73). Boyle (74), from studies on caries-inclined individuals, has concluded that sweets which contain fermentable carbohydrate are a main offender in the development of caries. He recommended that those who are highly susceptible to dental caries should eliminate sweets and pastries from their diet. (c) The relatively rapid drop in blood sugar which follows the initial hyperglycemia after the administration of carbohydrate contrasts sharply with the sustained blood glucose levels obtained from a diet rich in protein. This contrast is shown in Figure 2, which is derived from a report (75) of long standing. As a matter of fact, this principle is basic to the well-accepted custom of the "substantial breakfast."

CURING OVERWEIGHT

Turning to regimens which have proved effective for reducing weight, we find the following combination of principles is frequently used: (a) caloric deficit between input and output; (b) high-protein, moderate-fat, moderate-carbohydrate diet; and (c) relatively frequent, small feedings.

It is interesting to speculate on the role of high-protein content of the diet. First, in pure diets consumed by experimental animals, it can be shown that the net energy derived from protein is lower

[4] Mayer has more recently proposed that the glucostatic mechanism is probably applicable to short-term control of appetite, whereas a lipostatic control may be more important for long-term considerations.

[5] This displacement of nutritive value by extra consumption of sugar has been discussed in detail by Jolliffe (72), who states: "It is thus evident that the chief defect in the diet pattern of the United States is in our inordinate consumption of empty calories, a defect that has worsened by 30 to 43 per cent in the last forty years. It would be interesting to speculate how we would change our dietary pattern should our supplies of empty calories be healthfully cut in half and replaced isocalorically from the other food groups."

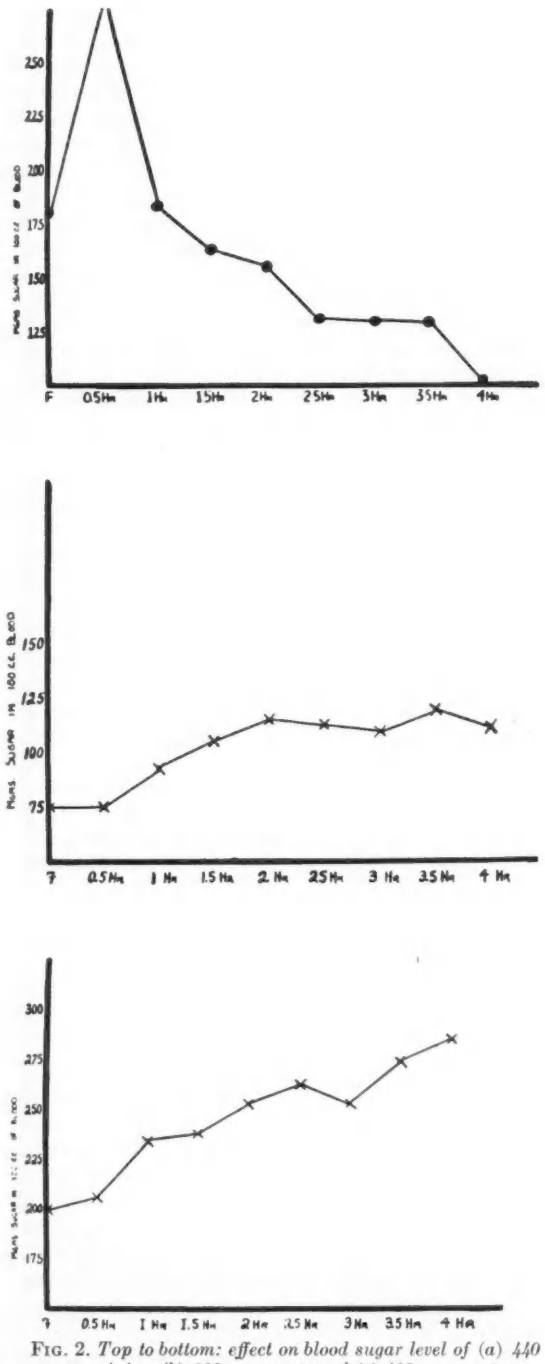


FIG. 2. *Top to bottom: effect on blood sugar level of (a) 440 gm. orange juice, (b) 200 gm. meat, and (c) 400 gm. meat.*

than that from fat or carbohydrate, because protein has the highest specific dynamic effect. For human beings, however, it is generally considered that SDA is not of major importance in caloric economy because the cost of SDA does not exceed 10 per cent of the caloric content of a mixed diet. Nevertheless, Mitchell (32) raises an interesting possibility that the difference between disposition of food energy in the ectomorph (wiry, slim build) versus the endomorph (soft, round build), may lie primarily in a longer duration of SDA. Second, the more stable blood sugar levels occurring during a high-protein intake may favor "satiety." Third, the end products of protein metabolism require water for excretion, but it is not established what role this may play in weight reduction. However, in a recent editorial (76), it has been contemplated that whereas a 100-calorie deficit in diet which was made up from body fat would subtract only 11 or 12 gm. body weight, a similar caloric deficit made up from body protein could result in about a 100-gm. loss because of the associated loss of body water. If this were utilized for general reducing purposes, long-term negative nitrogen balance would result—a status which would seem quite undesirable according to present nutritional principles.

Nevertheless, some interesting results have been reported by Dole and co-workers (77) who investigated the feasibility of a reducing regimen consisting of a low protein intake (35 ± 5 gm.) and unlimited caloric intake (carbohydrate, fat, and salt). The immediate results were considered encouraging in terms of weight reduction; 32 out of 42 patients lost ½ lb. per day. Perhaps even more important was the observation that appetite adjusted caloric intake to expenditure, and overeating was avoided. Unfortunately the majority of patients gradually relapsed after supervision was removed. One of the important observations made was that an established routine of eating and exercise was very helpful in gaining adherence to the reducing regimen.

THE TOLERABLE DIET

It is interesting to contemplate the role of adjuvants to the reducing diet. The anorexigenic effect of amphetamine compounds is believed to arise centrally (78). The use of noncaloric sweeteners is also an adjuvant for those who should avoid excess caloric intake in the interests of reducing, or because of disease. Not only does the use of these agents provide a means of reducing caloric intake without intolerable denial of sweetness, but this is accomplished without displacement of foods rich in vitamins, minerals, and protein. The noncaloric sweeteners also serve the purpose of reminding the individual to "watch his diet"; they support awareness that excessive indulgence in food must be avoided. The net result is to "pitch" the appetite at a lower level. We have observed that certain patients may, by sheer persistence, become permanently adjusted to lower levels of caloric intake. They may never return to their former dietary pattern of energy-rich foods. This may be considered as lowering the "appestat," a mechanism suggested by Jolliffe

(79) to describe the normal regulation of appetite and food intake according to energy expenditure.

The primary factor necessary for successful reduction of weight, and for maintenance of the reduced status, appears to be motivation or will. This may arise from a desire for long life, from need to prevent the complications or progression of disease, or merely from a desire to feel fit and to be physically attractive. In any case, long-term reduction is almost impossible in this the twentieth century without deliberately pitching caloric intake at a lower level than social custom and unconscious motivation often demand. It is, of course, entirely possible that laboratory and clinical investigation will establish organic causes of obesity. Even so, it is debatable whether these will negate the social and psychosomatic origins of a good deal of present-day obesity. The basic consideration remains the establishment of negative caloric balance. To accomplish this, the reducing regimen must be tolerable. This is important not only to assure weight reduction without irritability and personality change, but also to avoid self-defeat due to physical weakness and consequent inactivity. Furthermore, the chances of permanent change in food habits are greatly increased when the diet is tuned to self-control, rather than outright abnegation.

Turner (80), following observation of clinical patients failing to accomplish permanent leanness, ascribes such failures to excessive hunger, headaches, weakness, nervousness, and total denial of foods and dishes to which the individual has been accustomed, i.e. folkways. Too often, she points out, the reducing diet itself is not tuned to long-term acceptability, since it may lack foods which have attractive taste, variety, economy, availability, family-wide acceptance, or compatibility with the family cooking schedule. In brief, commonly prescribed reducing regimens are not aimed at long-term constructive revision of the acquired dietary habits which have led to obesity. Without such revision of food habits, the individual has little chance of remaining reduced permanently.

The more drastic and the more unusual the reducing diet, the less suited it seems to be for long-term weight-reducing purposes. Stieglitz (81) points out that results are more satisfactory to all concerned if a moderate reducing program is followed. He recommends that no more than 1 lb. per week should be lost. Other reports dealing with various reducing regimens, such as those by Ohlson and associates (82, 83) can be interpreted in support of this approach. In relation to normal food patterns, Young (84) has described satisfactory weight reduction on diets containing moderate amounts of fat. Thus, there are many protagonists of a moderately low caloric intake, consisting of relatively high protein, moderate fat, moderate carbohydrate.

Keeton (85) has suggested that frequent feedings would be valuable in reducing, provided energy intake does not exceed output. This is obviously opposed to the outright omission of any meal (such as breakfast or lunch), a measure penitently employed by many obese to atone for periodic orgies, or to postpone the time for arising from bed. Needless to say, there is general agreement that such omissions are both undesirable and ineffective in the long-term sense.

It has been frequently pointed out that the best diet for weight reduction is a modification of the normal diet. Reduction merely in the quantity of certain foods, rather than outright elimination, is often the keynote to success. Certainly a level of 1200 calories seems to be a minimum, commonly used level at which to pitch the reducing diet. Many prefer not to go below 1500 calories, or even more, when considering the long pull over the short haul. The ideal reducing diet for the adult need not be devoid of any food present in the normal diet. Meat, poultry, fish, eggs, milk, and other dairy products, leafy green and yellow vegetables, citrus fruits, and enriched and whole grain products are all desirable and necessary. In children, weight reduction is best accomplished by replacement of "empty calories" (72) (candy and soft drinks) by protective and growth-promoting foods. The aim there should be to permit growth to catch up with weight (86).

Individualized meal plans are far superior to a list of do's and don'ts. A basic pattern which is amenable to such individualized use is outlined in the *Handbook of Diet Therapy* (87). From this basic plan it is possible to make modifications to suit the individual need. These and other matters pertaining to foods will not be presented in detail here because they are indeed familiar to the dietitian.

SUMMARY

Despite public awareness that obesity jeopardizes health and long life, it persists as a major problem. This is reflected in its high incidence and the inability to accomplish long-term results in those who may reduce successfully, albeit temporarily. Chiefly because of increased medical and public attention to degenerative diseases as a cause of death in middle age and beyond, efforts have been made to obtain information on processes which may initiate, produce, and perpetuate obesity. Metabolic, neurosomatic, and psychosomatic factors have been proposed. A relationship between the hypothalamus and appetite control has often been suggested. It would seem likely that multiple etiologies of human obesity may exist, and some of these may have been demonstrated in the animal. In obese human beings, deviations from normal metabolic pathways have been reported; increased tolerance for glucose and increased lipogenesis have been offered as possible explanations for insatiable appetite and consequent obesity.

It is uncertain where many of the recent data fit in the scheme of human obesity. Despite our advancing knowledge about various aspects of the obesity problem, it seems unlikely that the "extranutritive" uses of food in modern civilization will be excluded as a major contributory factor. Examples of such extranutritive functions include social eating and drinking, orexia nervosa for relief of mental and physical fatigue, and oral regression secondary to frustration, anxiety, and other emotions. Much of modern obesity is in part a "spectator" disease and, in part, a consequence of mechanization. The final common pathway remains an increased caloric intake over output. Proper motivation to reduce and determination not to "let oneself go" are essential for accomplishment and maintenance of leanness. The desirability of merely modifying the nutritionally adequate normal diet for reducing purposes is reaffirmed. Probably the caloric level of reducing diets should be considerably higher than is customarily employed, if long-term reduction of weight is to be attained.

REFERENCES

(1) DUBLIN, L. I., AND MARKS, H. H.: Overweight Shortens Life. Statistical Bull. No. 10. New York: Metropolitan Life Ins. Co., 1951.

(2) DUBLIN, L. I.: Fat people who lose weight live longer. *In* Overeating, Overweight and Obesity. Nutritional Symposium Series No. 6. New York: Natl. Vitamin Foundation, Inc., 1953, p. 106.

(3) LEVY, R. L., WHITE, P. D., STROUD, W. D., AND HILLMAN, C. C.: Overweight: its prognostic significance in relation to hypertension and cardiovascular-renal diseases. J.A.M.A. 131: 951, 1946.

(4) THOMSON, K. J.: Some observations on the development and course of hypertensive vascular disease. Proc. 38th Annual Meeting, Medical Section, American Life Conv., June, 1940. *Cited by* Armstrong, D. B., Dublin, L. I., Wheatley, G. M., and Marks, H. H.: Obesity and its relation to health and disease. J.A.M.A. 147: 1007, 1951.

(5) MASTER, A. M., DUBLIN, L. I., AND MARKS, H. H.: The normal blood pressure range and its clinical implications. J.A.M.A. 143: 1464, 1950.

(6) Diabetes in the 1940's. New York: George F. Baker Clinic and Metropolitan Life Ins. Co., 1940.

(7) SHORT, J. J.: Increase of electrocardiographic changes with obesity. Proc. Life Ext. Exam. 1: 82, 1939.

(8) SIMONSON, E., AND KEYS, A.: The effect of age and body weight on the electrocardiogram of healthy men. Circulation 6: 749, 1952.

(9) GREEN, M. B., AND BECKMAN, M.: Obesity and hypertension. New York J. Med. 48: 1250, 1948.

(10) BROZEK, J., CHAPMAN, C. B., AND KEYS, A.: Drastic food restriction. Effect on cardiovascular dynamics in normotensive and hypertensive conditions. J.A.M.A. 137: 1569, 1948.

(11) DUBLIN, L. I., JIMENIS, A. O., AND MARKS, H. H.: Factors in the selection of risks with a history of gall bladder disease. Proc. A. Life Ins. Med. Dir. Am. 21: 34, 1934.

(12) BARKER, N. W., NYGAARD, K. K., WALTERS, W., AND PRIESTLEY, J. T.: A statistical study of postoperative venous thrombosis and pulmonary embolism. 2. Predisposing factors. Proc. Staff Meet., Mayo Clin. 16: 1, 1941.

(13) DUBLIN, L. I., AND MARKS, H. H.: Mortality of risks with asthma. Proc. A. Life Ins. Med. Dir. Am. 20: 191, 1933.

(14) Medical Impairment Study, 1929. New York: Actuarial Soc. of America and Assn. of Life Ins. Med. Directors of America, 1931.

(15) KERR, W. J., AND LAGEN, J. B.: The postural syndrome related to obesity leading to postural emphysema and cardiorespiratory failure. Ann. Int. Med. 10: 569, 1936.

(16) SHORT, J. J., AND JOHNSON, H. J.: The effect of overweight on vital capacity: a study of 196 individuals. Proc. Life Ext. Exam. 1: 36, 1939.

(17) ODELL, L. D., AND MENGERT, W. F.: The overweight obstetric patient. J.A.M.A. 128: 87, 1945.

(18) KURLANDER, A. B.: Group therapy in reducing. Two-year follow-up of Boston pilot study. J. Am. Dietet. A. 29: 337, 1953.

(19) FELLOWS, H. H.: Studies of relatively normal obese individuals during and after dietary restrictions. Am. J. Med. Sc. 181: 301, 1931.

(20) HARVEY, H. I., AND SIMMONS, W. D.: Weight reduction: a study of the group method. Report of progress. Am. J. Med. Sc. 227: 521, 1954.

(21) GRAY, H., AND KALLENBACH, D. E.: Obesity treatment: results on 212 out-patients. J. Am. Dietet. A. 15: 239, 1939.

(22) KEYS, A., AND BROZEK, J.: Body fat in adult man. Physiol. Rev. 33: 245, 1953.

(23) MAYER, J., AND STARE, F. J.: Exercise and weight control. Frequent misconceptions. J. Am. Dietet. A. 29: 340, 1953.

(24) RATHBUN, E. N., AND PACE, N.: Studies on body composition. 1. The determination of total body fat by means of the body specific gravity. J. Biol. Chem. 158: 667, 1945.

(25) HUNT, E. E., JR., PECKOS, P. S., AND FRY, P. C.: Factors in human obesity. *In* Overeating, Overweight and Obesity. Nutritional Symposium Series No. 6. New York: Natl. Vitamin Foundation, Inc., 1953, p. 73.

(26) MAYER, J.: Genetic, traumatic and environmental factors in the etiology of obesity. Physiol. Rev. 33: 472, 1953.

(27) MAYER, J., AND ZIGHERA, C. Y.: The multiple etiology of obesity: production of two types of obesity in littermate mice. Science 119: 96, 1954.

(28) BLEISCH, V. R., MAYER, J., AND DICKIE, M. M.: Familial diabetes mellitus in mice, associated with insulin resistance, obesity, and hyperplasia of the islands of Langerhans. Am. J. Path. 28: 369, 1952.

(29) GURNEY, R.: The hereditary factor in obesity. Arch. Int. Med. 57: 557, 1936.

(30) ANGEL, J. L.: Constitution in female obesity. Am. J. Phys. Anthropol. 7: 433, 1949. *Cited by* Mitchell, H. H.: Overnutrition and obesity. J. Clin. Nutrition 1: 66, 1952.

(31) BEAUDOIN, R., VANITALLIE, T. B., AND MAYER, J.: Carbohydrate metabolism in "active" and "static" human obesity. J. Clin. Nutrition 1: 91, 1953.

(32) MITCHELL, H. H.: Overnutrition and obesity. J. Clin. Nutrition 1: 66, 1952.

(33) VANITALLIE, T. B., MAYER, J., AND STARE, F. J.: Nutrition in clinical medicine. New England J. Med. 250: 199, 1954.

(34) DELGADO, J. M. R., AND ANAND, B. K.: Increase of food intake induced by electrical stimulation of the lateral hypothalamus. Am. J. Physiol. 172: 162, 1953.

(35) HOUSSAY, B. A., LEWIS, J. T., ORIAS, O., MENENDEZ, E. B., HUG, E., FOGLIA, V. G., AND LELOIR, L. F.:

Human Physiology. 1st ed. New York: McGraw-Hill Book Co., Inc., 1951.
(36) BROBECK, J. R.: Physiology of appetite. *In* Overeating, Overweight and Obesity. Nutritional Symposium Series No. 6. New York: Natl. Vitamin Foundation, Inc., 1953, p. 36.
(37) CARLSON, A. J.: The Control of Hunger in Health and Disease. Chicago: University of Chicago Press, 1916.
(38) BULATAO, E., AND CARLSON, A. J.: The relation of the blood sugar to the gastric hunger contractions. Proc. Am. Physiological Soc., 36th Ann. Meeting, 1923. Am. J. Physiol. 68: 148, 1924.
(39) SCOTT, W. W., SCOTT, C. C., and LUCKHARDT, A. B.: Observations on the blood sugar level before, during and after hunger periods in humans. Am. J. Physiol. 123: 243, 1938.
(40) COWGILL, G. R.: The energy factor in relation to food intake: experiments on the dog. Am. J. Physiol. 85: 45, 1928.
(41) ADOLPH, E. F.: Urges to eat and drink in rats. Am. J. Physiol. 151: 110, 1947.
(42) JANOWITZ, H. D., AND HOLLANDER, F.: The time factor in the adjustment of food intake to varied caloric requirement in the dog. A study of the precision of appetite regulation. Ann. N. Y. Acad. Sc., in press.
(43) BOOTH, G., AND STRANG, J. M.: Changes in temperature of the skin following the ingestion of food. Arch. Int. Med. 57: 533, 1936.
(44) BROBECK, J. R.: Food intake as a mechanism of temperature regulation. Yale J. Biol. & Med. 20: 545, 1948.
(45) MAYER, J., AND GREENBERG, R. M.: Hyperthermia in hypothalamic hyperphagia. Am. J. Physiol. 173: 523, 1953.
(46) MAYER, J.: Glucostatic mechanism of regulation of food intake. New England J. Med. 249: 13, 1953.
(47) BROBECK, J. R.: Proceedings of Symposium, the Regulation of Hunger and Appetite. N. Y. Acad. Sc., November, 1954.
(48) HOLLANDER, F., SOBER, H. A., AND BANDES, J.: A study of hunger and appetite in a young man with esophageal obstruction and jejunostomy. Ann. N. Y. Acad. Sc., in press.
(49) GROSSMAN, M. I.: Integration of current views on regulation of hunger and appetite. Ann. N. Y. Acad. Sc., in press.
(50) WERTHEIMER, E., AND SHAPIRO, B.: The physiology of adipose tissue. Physiol. Rev. 28: 451, 1948.
(51) SCHOENHEIMER, R., AND RITTENBERG, D.: Deuterium as an indicator in the study of intermediary metabolism. 5. The desaturation of fatty acids in the organism. 6. Synthesis and destruction of fatty acids in the organism. J. Biol. Chem. 113: 505, 1936; 114: 381, 1936.
(52) GERSH, I., AND STILL, M. A.: Blood vessels in fat tissues; relation to problems of gas exchange. J. Exper. Med. 81: 219, 1945.
(53) PORTIS, B.: Role of omentum of rabbits, dogs and guinea-pigs in antibody production. J. Infect. Dis. 34: 159, 1924.
(54) The versality of adipose tissue. Editorial. Ann. Int. Med. 32: 162, 1950.
(55) SALCEDO, J., JR., AND STETTEN, D., JR.: The turnover of fatty acids in the congenitally obese mouse. J. Biol. Chem. 151: 413, 1943.
(56) PENNINGTON, A. W.: An alternate approach to the problem of obesity. J. Clin. Nutrition 1: 100, 1953.
(57) PENNINGTON, A. W.: Practical reducing regimes. *In* Overeating, Overweight and Obesity. Nutritional Symposium Series No. 6. New York: Natl. Vitamin Foundation, Inc., 1953, p. 123.
(58) PORTIS, S. A.: Life situations, emotions and hyperinsulinism. J.A.M.A. 142: 1281, 1950.
(59) DUNCAN, G. G.: Diseases of Metabolism. 1st ed. Philadelphia: W. B. Saunders Co., 1942, p. 787.
(60) FORBECH, V.: On the interpretation of the respiratory quotient. The relation of the carbohydrate metabolism to the fat metabolism determined on the basis of the respiratory quotient (non-protein). The final displacement in the carbohydrate balance and fat balance during metabolism—irrespective of whether metabolism takes place only by combustion or if conversion processes occur simultaneously. Acta med. scandinav. 96, Suppl. 90: 354, 1938.
(61) BROSIN, H. W.: The psychology of overeating. *In* Overeating, Overweight and Obesity. Nutritional Symposium Series No. 6. New York: Natl. Vitamin Foundation, Inc., 1953, p. 52.
(62) BROSIN, H. W.: The psychiatric aspects of obesity. J.A.M.A. 155: 1238, 1954.
(63) RICHARDSON, H. B.: Obesity as a manifestation of neurosis. M. Clin. North America 30: 1187, 1946.
(64) WAIFE, S. O.: The pathogenesis of obesity. Am. Pract. & Digest Treat. 2: 47, 1947.
(65) WEISS, E.: Psychosomatic aspects of dieting. J. Clin. Nutrition 1: 140, 1953.
(66) FREED, S. C.: Psychic factors in the development and treatment of obesity. J.A.M.A. 133: 369, 1947.
(67) HAMBURGER, W. W.: Emotional aspects of obesity. M. Clin. North America 35: 483, 1951.
(68) MAYER, J.: Decreased activity and energy balance in the hereditary obesity—diabetes syndrome of mice. Science 117: 504, 1953.
(69) BEST, W. R.: The caloric equivalent of weight loss. Proc. Central Society for Clin. Research, 27th Ann. Meeting, 1954. J. Lab. & Clin. Med. 44: 768, 1954.
(70) FRYER, J. H., MOORE, N. S., WILLIAMS, H. H., AND YOUNG, C. M.: A study of the inter-relationship of the energy-yielding nutrients, blood glucose levels and subjective appetite in man. In preparation.
(71) QUIGLEY, J. P.: Proceedings of symposium, the regulation of hunger and appetite. N. Y. Acad. Sc., November, 1954.
(72) JOLLIFFE, N.: Recent advances in nutrition of public health significance. Paper delivered at Asociación Mexicana de Estudios de Farmacologia y Terapeutica, Mexico City, July 27, 1954.
(73) Sugar and dental caries: the effect on the teeth of sweetened beverages and other sugar-containing substances. J. Am. Dent. A. 47: 387, 1953.
(74) BOYLE, P. E.: Teeth—sweet and sour. Presented at 37th Ann. Meeting, The American Dietetic Association, 1954.
(75) POLLACK, H., AND DOLGER, H.: Advantages of prozinsulin (protamine zinc insulin) therapy: dietary suggestions and notes on the management of cases. Ann. Int. Med. 12: 2010, 1939.
(76) Some thoughts regarding obesity. Editorial. Am. J. Clin. Nutrition 2: 350, 1954.
(77) DOLE, V. P., SCHWARTZ, I. L., THAYSEN, J. H., THORN, N. A., AND SILVER, L.: Treatment of obesity with a low protein calorically unrestricted diet. Am. J. Clin. Nutrition 2: 381, 1954.
(78) IVY, A. C., AND GOETZL, F. R.: D-desoxyephedrine, a review. War Med. 3:60, 1943.
(79) JOLLIFFE, N.: Reduce and Stay Reduced. New York: Simon & Schuster, Inc., 1952.
(80) TURNER, D. F.: Private communication.
(81) STIEGLITZ, E. J.: Nutrition problems of geriatric medicine. *In* Handbook of Nutrition. 2nd ed.

Philadelphia: Blakiston Co., 1951, p. 327.

(82) BREWER, W. D., CEDERQUIST, D. C., WILLIAMS. B., BEEGLE, R. M., DUNSING, D., KELLEY, A. L., AND OHLSON, M. A.: Weight reduction on low-fat and low-carbohydrate diets. 2. Utilization of nitrogen and calcium. J. Am. Dietet. A. 28: 213, 1952.

(83) CEDERQUIST, D. C., BREWER, W. D., BEEGLE, R. M., WAGONER, A. N., DUNSING, D., AND OHLSON, M. A.: Weight reduction on low-fat and low-carbohydrate diets. 1. Clinical results and energy metabolism. J. Am. Dietet. A. 28: 113, 1952.

(84) YOUNG, C. M.: Weight reduction using a moderate-fat diet. 1. Clinical responses and energy metabolism. 2. Biochemical responses. J. Am. Dietet. A. 28: 410, 529, 1952.

(85) KEETON, R. W.: Influence of distribution of meals on appetite in the sick. Appetite-training. J. Am. Dietet. A. 26: 336, 1950.

(86) LEVERTON, R. M.: The merry-go-round of reducing diets. J. Am. Dietet. A. 29: 333, 1953.

(87) TURNER, D.: Handbook of Diet Therapy. Rev. ed. Chicago: University of Chicago Press, 1952.

BIOGRAPHICAL NOTES ON THE HISTORY OF NUTRITION

William Kitchiner—1775 (?)–February 27, 1827

Because he thought that poor preparation of food was responsible for much human disease, Dr. William Kitchiner wrote one of the most famous and probably one of the earliest scientific cook books, *Apicius Redivivus or The Cook's Oracle*, in 1817. Each recipe had been tested by the author and exact measurable proportions were given. Not only recipes were included, but also sections on household management, budgeting, carving, social etiquette, home medical advice, famous quotations, and witty and serious poetry. The book was written by a man educated at Eton and then in medicine at Glasgow, although he never practiced. He was also a scientist interested in optics. His cook book went through thirteen English and six American editions, even though it had two serious faults—a poor index and muddled directions.

The author, William Kitchiner, was an unusual and somewhat eccentric individual. He was the only son by the second marriage of William Kitchiner who came to London from Hertfordshire and began life as a coal porter, but by trading in coal amassed a fortune of £2000 a year and became a justice of the peace at Bow Street Court House in Strand, London. His son, William, was probably born in London in 1775. Since he inherited his father's wealth, he did not need to practice medicine and devoted himself to science, music, and cookery which he was convinced was a major factor in influencing health.

Kitchiner attained culinary skill through the help of Henry Osborne who was cook to Sir Joseph Banks of the Royal Society of London. Kitchiner's lunches were served for a special few chosen guests, and his dinners were famous; but no guests were admitted after the appointed hour because Kitchiner believed that well prepared food spoiled if it had to stand. Over his chimney piece was a placard: "At seven come,—at eleven go." Invitations to his dinners were eagerly sought, not only because of the excellence of the food but for the excellence of conversation as well.

Kitchiner wrote other books besides *The Cook's Oracle*, among them: *The Art of Invigorating and Prolonging Life by Food, Clothes, Air, Exercise, Wine, Sleep; The Economy of the Eyes, Precepts for the Improvement and Preservation of the Sight, and what Spectacles are best calculated for the Eyes, and an Account of the Pancratic Magnifier; Practical Observations on Telescopes, Opera-glasses, and Spectacles; The Housekeeper's Ledger; Peptic Precepts to Prevent and Relieve Indigestion;* and *Loyal, National, and Sea Songs of England* (in which "God Save the King" was printed for the first time). His interest in science led him to design a popular telescope and to publish several volumes on optics and telescopes.

A bust of Kitchiner has been reproduced in the front of *The Housekeeper's Ledger* and shows him as a handsome man. He is described as a quiet and apparently timid man, but one who was cheerful and eloquent when talking of cookery, science, or music. He never spoke ill of anyone, was a firm friend and valuable adviser, and was abstemious and regular in his habits. On August 2, 1799, he married Miss Oram but separated from her after a short time. On February 17, 1827, Kitchiner dined with a friend in famous Baker Street, but was taken ill on the way home and died in the early morning from a heart attack. He was buried in the Church of St. Clement Danes in London.

REFERENCES: Goase, G. C.: William Kitchiner, M.D. Dictionary of National Biography, Vol. 31, p. 231; Dr. Kitchiner, Obituary. Gentleman's Magazine 97: 470 (Jan.–June), 1827; Corner, B. C.: Dr. William Kitchiner and His Cook Books. J. Hist. Med. 9: 352, 1954.—*Contributed by E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa.*

Physiologic Response of Boys 12 to 14 Years Old to Different Breakfasts[1]

KATE DAUM, Ph.D., W. W. TUTTLE, Ph.D., ROSEMARY LARSEN, LOISE ROLOFF, and JOHN SALZANO

Departments of Nutrition and Physiology, State University of Iowa, Iowa City

IT HAS been shown by Daum *et al.* (1) that as far as young women are concerned, there is no differentiation in tremor magnitude or choice reaction time following the regular consumption of a large or small breakfast, consisting of ordinary breakfast items. Tuttle *et al.* (2) conducted a study in which it was reported that no differentiation was found by way of neuromuscular tremor magnitude or choice reaction time in the case of young men, following the consumption of a basic (750 calories) or a large (1200 calories) breakfast made up of ordinary breakfast items. However, in 75 per cent of the young men studied, maximum work output following the larger breakfast was significantly less than after the basic breakfast. Tuttle *et al.* (3) also reported an investigation having to do with the effect of the size of breakfast on the physiologic responses of a group of men sixty to eighty-three years of age. It was concluded from this study that a basic breakfast is better than a heavy breakfast for promoting both physical and mental efficiency of older men in the late morning hours.

The question of the effect of the content of breakfast on physiologic responses was studied by Tuttle *et al.* (2, 3). These studies indicated that, on the basis of the responses observed, both in young and old men, a basic breakfast (750 calories) consisting of ordinary breakfast items built around cereal and milk, and an isocaloric breakfast built around bacon, eggs, and milk are both equally effective in promoting physical and mental efficiency in the late morning hours.

The object of the experiment reported here is to determine the effect of the size and content of breakfast on the physiologic responses of boys twelve to fourteen years old.

[1] This work was generously supported by a research grant from the Cereal Institute, Inc., Chicago. Received for publication January 14, 1955.

Experimental Plan

The physiologic responses used to compare the effectiveness of breakfasts of different size and content, on maintaining mental and physical efficiency in the late morning hours were:

(a) Maximum work rate.
(b) Maximum work output.
(c) Neuromuscular tremor magnitude.
(d) Choice reaction time.

SUBJECTS

The experimental group consisted of eight school boys varying in age from twelve to fourteen years. All attended a local school.[2] Through the cooperation of the administrators and teachers at the school, arrangements were made whereby the subjects could meet both the dietary and experimental requirements of the experiment without interfering with their duties at school. To accomplish this, transportation was provided; the boys were collected every day at 7:00 A.M., 11:50 A.M., and 5:00 P.M. and delivered to the University Hospital cafeteria where all meals were served under the supervision of the Department of Nutrition. Immediately following the meals, each subject was delivered to the appropriate place. On the days when the physiologic responses were measured, the subjects were delivered to the laboratory at 11:00 A.M. Immediately following the experiments they had lunch.

At the beginning and during the experiment, physical checks were made by a physician to insure the health status of each subject.

[2] This opportunity is taken to express our thanks to Sr. Mary Alice, Principal of St. Mary's School, and to Sr. Mary Valerian, who had charge of the school work of the boys. We also wish to express our appreciation to Father Schmidt who was instrumental in the organization of the group for the experiment.

TECHNIQUES FOR MEASURING PHYSIOLOGIC RESPONSE

The technique employed for measuring maximum work rate and maximum work output has been described by Tuttle and Wendler (4). A bicycle ergometer is used which provides for recording maximum work output in terms of volts which are converted to kg. m. The method used for measuring choice reaction time has been described by Tuttle, Wilson, and Daum (5). The stimulus pattern for determining choice reaction time consisted of flashing any or all of a bank of five lights, the subject being instructed to respond to a given light only. Simultaneously with the flashing of the designated light, a chronoscope was started; when the subject responded by pushing a key, the chronoscope stopped, setting off the elapsed time in milliseconds. Mitchem and Tuttle (6) have described the method used for measuring neuromuscular tremor magnitude. Static tremor is recorded from the index finger of the outstretched dominant arm, which is supported by voluntary resistance against the force of gravity. The tremor is picked up by a strain gauge, and the voltage developed is amplified and recorded on a Brush recorder.

DIETARY REGIMENS

The diets were planned so that the total daily caloric intake for each boy was the same during each breakfast regimen studied. The food was distributed among three regular meals and a light lunch before bedtime. The bedtime lunch consisted of milk and crackers or cookies and was provided by the Department of Nutrition, but eaten at home.

Basic Cereal-and-Milk Breakfast. This breakfast consisted of cereal, milk, fruit, bread, and butter and provided approximately one-fourth the daily caloric requirement of each subject. The proximate composition of this breakfast is shown in Table 1.

Basic Bacon-Egg-and-Milk Breakfast. This meal also provided approximately one-fourth the daily caloric requirement of each individual subject. It was essentially the same as the basic cereal-and-milk breakfast except it was built around bacon and eggs (Table 1).

Mixed Basic Breakfast. This breakfast also was designed to provide approximately one-fourth the total daily caloric requirement. It was essentially the same in food content, but, unlike the other basic breakfasts, it was built around both cereal and bacon and eggs. The proximate composition is also given in Table 1.

Mixed Heavy Breakfast. This breakfast contained cereal, milk, bacon, and eggs, together with other ordinary breakfast items and provided approximately 40 per cent of the total daily caloric requirement. Obviously, the heavy breakfast provided approximately 15 per cent more of the daily caloric requirement, contained 60 per cent more calories and

TABLE 1

*Proximate composition of the experimental breakfasts**

FOOD	WEIGHT	PROTEIN	FAT	CARBOHYDRATE	CALORIES
Basic Cereal-and-Milk Breakfast					
	gm.	*gm.*	*gm.*	*gm.*	
Fruit or juice	100	0.4	0.1	16.1	67
Cereal	30	3.0	0.6	22.0	105
Enriched white bread, toasted	50	4.2	1.0	26.2	130
Sugar	10	—	—	10.0	40
Butter	10	0.1	8.1	—	73
Whole milk	480	16.8	18.8	23.6	330
Total	—	24.5	28.6	97.9	745
Basic Bacon-Egg-and-Milk Breakfast					
Fruit	100	0.6	0.2	19.1	81
Egg (soft cooked)	50	6.4	5.8	0.4	79
Bacon, broiled	30	4.2	8.1	0.4	93
Enriched white bread, toasted	60	5.0	1.2	31.4	156
Grape jam	20	0.1	—	15.0	61
Butter	15	0.1	12.1	0.1	109
Whole milk	240	8.4	9.4	11.8	165
Total	—	24.8	36.8	78.2	744
Mixed Basic Breakfast					
Orange juice	100	0.8	0.2	11.0	44
Cereal	30	3.0	0.6	22.0	105
Cream	125	4.2	14.8	5.5	173
Sugar	5	—	—	5.0	20
Egg	50	6.1	5.5	0.3	77
Toast	23	2.0	0.7	12.0	63
Bacon	15	3.5	8.8	0.5	96
Butter	8	—	6.5	—	58
Jelly	10	—	—	6.5	25
Milk	200	7.0	7.8	9.8	136
Total	—	26.6	44.9	72.6	797
Heavy Breakfast					
Orange juice	150	1.2	0.3	16.5	66
Cereal	42	4.2	0.8	30.8	147
Sugar	20	—	—	20.0	80
Eggs	100	12.2	11.0	0.6	154
Bacon	10	2.4	6.0	0.2	64
Toast	50	4.4	1.5	25.0	140
Butter	16	—	13.0	—	114
Jelly	25	—	—	16.2	63
Milk	244	8.5	9.5	12.0	166
Cocoa, made from					
Chocolate sirup	15	0.1	0.8	10.8	50
Milk	200	7.0	7.8	9.8	136
Cream	25	0.9	2.9	1.1	35
Total	—	40.9	53.6	143.0	1215

* Figures for calculation were taken from Bowes and Church (7).

TABLE 2

Effect of the content of breakfast on physiologic responses

SUBJECT	MAXIMUM WORK RATE	MAXIMUM WORK OUTPUT	NEUROMUSCULAR TREMOR MAGNITUDE	CHOICE REACTION TIME
Basic Cereal-and-Milk Breakfast				
	kg.m.	*kg.m./min.*	*cm.²*	*milliseconds*
1	4006	2283	2.28	218
2	3430	1911	1.78	250
3	3983	2164	1.68	272
4	3011	1713	2.68	238
5	2990	2140	1.48	229
6	2805	1573	1.96	210
7	2829	1693	1.24	283
8	3059	1986	1.15	303
Mean	3264	1933	1.78	250
Standard deviation	489.3	255.7	0.518	32.9
Basic Bacon-Egg-and-Milk Breakfast				
1	4173	2495	1.65	181
2	3926	2061	1.75	240
3	4233	2391	1.60	247
4	3405	1819	1.82	246
5	2874	2044	1.64	253
6	2604	1469	1.68	240
7	2445	1640	1.90	276
8	2715	1988	1.70	275
Mean	3298	1988	1.72	245
Standard deviation	732.7	347.8	0.100	29.5

60 per cent more protein than the basic breakfasts (Table 1).

ROTATION OF BREAKFAST REGIMENS

The experiment was designed to show the relative effectiveness of breakfasts of different sizes and content in promoting efficiency in the late morning hours. Since the subjects involved had participated previously in a similar experiment, they were familiar both with the experimental and dietary procedures.

Because some time had elapsed since the previous experiment, the investigation was begun by devoting one week to the orientation of the subjects to the procedures. During this period, the boys ate food of their own choosing in the University Hospital cafeteria. During the periods which followed, the complete diet of the boys was controlled. The experimental breakfast periods were as follows:

Period 1—basic cereal-and-milk breakfast, three weeks. The term "basic" is used to describe a breakfast which provides approximately one-fourth of the daily protein and caloric requirement of each subject.

Period 2—basic bacon-egg-and-milk breakfast, three weeks.

Period 3—mixed basic breakfast, four weeks.

Period 4—heavy mixed breakfast, four weeks.

TABLE 3

Statistical comparison of data presented in Table 2

COMPARISON OF BASIC CEREAL-AND-MILK BREAKFAST AND BASIC BACON-EGG-AND-MILK BREAKFAST ON	*t* VALUE	LEVEL OF SIGNIFICANCE
		%
Maximum work rate	0.29	78.0
Maximum work output	1.15	28.9
Neuromuscular tremor	0.32	75.8
Choice reaction time	0.65	53.7

After the preliminary period, the eight subjects were divided into two groups of four. During the first three-week period, the basic cereal-and-milk breakfast was fed to one group, and the basic bacon-egg-and-milk breakfast was eaten by the other group. During the following three weeks, the groups were reversed, and the experiment was repeated. The same procedure was followed in the comparison of the basic mixed breakfast and the heavy mixed breakfast as to their effects on physiologic responses in the late morning hours. This approach made provision for each subject to serve as his own control.

The subjects reported to the laboratory twice each week between 11:00 A.M. and 12 noon. During this time the various tests were given and records made of the physiologic responses. Six records were obtained for comparison of the basic breakfasts, and eight for the basic and heavy breakfasts.

Results

Since a comparison of the mean individual data with regard to both size and content of the breakfasts showed no significant trends, the data are presented on the basis of group means.

Content of Breakfast. The data on group means relative to the effect of the content of breakfast on physiologic responses are shown in Table 2, and comparisons of data are presented in Table 3. These comparisons show that the basic cereal-and-milk breakfast and the basic bacon-egg-and-milk breakfast were equally effective in maintaining the physical and mental efficiency of twelve- to fourteen-year-old boys in the late morning hours, since the differences in maximum work rate, maximum work output, neuromuscular tremor magnitude, and choice reaction time after the two breakfasts were not significant.

Size of Breakfast. The data on group means having to do with the effect of the size of breakfast on physiologic responses are shown in Table 4, and the data are compared statistically in Table 5. This comparison shows that there were no significant differences in maximum work rate, maximum work output, neuromuscular tremor magnitude, and choice reaction time in the late morning hours following the basic and heavy breakfast.

TABLE 4

Effect of size of breakfast on physiologic responses

SUBJECT	MAXIMUM WORK RATE	MAXIMUM WORK OUTPUT	NEUROMUSCULAR TREMOR MAGNITUDE	CHOICE REACTION TIME
	Basic Breakfast			
	kg.m.	*kg.m./min.*	*cm.²*	*milliseconds*
1	4201	2431	2.45	215
2	3688	2083	2.08	267
3	4068	2516	2.07	246
4	3455	1819	2.35	256
5	3205	2013	1.57	289
6	2990	1858	2.12	242
7	2988	1799	1.45	259
8	3043	1893	1.62	285
Mean	3455	2052	1.96	257
Standard deviation	486.0	278.4	0.373	24.0
	Heavy Breakfast			
1	4286	2539	1.75	196
2	3714	2141	1.91	231
3	4116	2431	1.39	226
4	3380	1874	2.68	262
5	3184	1930	1.63	294
6	2991	1710	2.23	256
7	2969	1930	1.82	243
8	3305	2006	2.04	265
Mean	3493	2070	1.93	247
Standard deviation	498.0	284.5	0.125	29.6

TABLE 5

Statistical comparison of data presented in Table 4

COMPARISON OF BASIC BREAKFAST AND HEAVY BREAKFAST ON	t VALUE	LEVEL OF SIGNIFICANCE
		%
Maximum work rate	0.99	35.5
Maximum work output	0.42	68.7
Neuromuscular tremor	0.21	84.0
Choice reaction time	1.78	11.8

Discussion

It has been shown quite conclusively in these laboratories that, among any of the age groups studied, the content of the breakfast is relatively unimportant as long as it contains adequate protein and calories. The evidence is not quite so clear cut concerning the size of the breakfast. In the case of men past sixty years of age, the data indicate that the mental and physical efficiency is maintained better following a basic breakfast than after a heavy morning meal. Also, the experiments dealing with young men showed that in 75 per cent of the cases, maximum work output was greater in the late morning hours following a basic breakfast than after a heavy breakfast. In the case of young women and twelve- to fourteen-year-old boys, it seemed immaterial whether they ate a basic or large breakfast. In general, a basic breakfast providing approximately one-fourth the total daily caloric and protein requirement is to be recommended rather than a heavy morning meal, as far as physical and mental efficiency in the late morning hours are concerned. School girls in the younger age group were omitted from the researches, not only because it seems reasonable to suppose that they would react similarly to the boys of the same age group, but also because their inclusion appeared to present difficult problems under the circumstances involved.

Summary and Conclusions

Data were collected from eight school boys, twelve to fourteen years of age, designed to show the effects of the size and content of breakfast on physical and mental efficiency in the late morning hours, as exhibited by any changes which might occur in maximum work rate, maximum work output, neuromuscular tremor magnitude, and choice reaction time. On the basis of the data presented, the following conclusions seem justified:

There was no differentiation by way of the physiologic responses studied after the consumption of similar basic breakfasts built around bacon, eggs, and milk and around cereal and milk.

There was no differentiation by way of the physiologic responses studied after the consumption of a basic breakfast (750 calories) and one containing 60 per cent more calories and 60 per cent more protein.

REFERENCES

(1) Daum, K., Tuttle, W. W., Martin, C., and Myers, L.: Effect of various types of breakfasts on physiologic response. J. Am. Dietet. A. 26: 503, 1950.

(2) Tuttle, W. W., Daum, K., Imig, C. J., Martin, C., and Kisgen, R.: Effects of breakfasts of different size and content on physiologic response of men. J. Am. Dietet. A. 27: 190, 1951.

(3) Tuttle, W. W., Daum, K., Roberts, H., and Randall, B.: Physiologic response to size and content of breakfast by men over 60. J. Am. Dietet. A. 29: 34, 1953.

(4) Tuttle, W. W., and Wendler, A. J.: The construction, calibration, and use of an alternating current electrodynamic brake bicycle ergometer. J. Lab. & Clin. Med. 30: 173, 1945.

(5) Tuttle, W. W., Wilson, M., and Daum, K.: Effect of altered breakfast habits on physiologic response. J. Appl. Physiol. 1: 545, 1949.

(6) Mitchem, J. C., and Tuttle, W. W.: Influence of exercises of graded intensities, emotional stress and age, on neuromuscular tremor magnitude. Res. Quart. 25: 65, 1954.

(7) Bowes, A. deP., and Church, C. F.: Food Values of Portions Commonly Used. 7th ed. Philadelphia: A. deP. Bowes, 1951.

Sale of half-and-half, a pasteurized and usually homogenized mixture of cream and milk or skim milk, usually containing between 10 and 12 per cent milk fat, is now permitted in twenty states. Standardization of the product depends on state and local requirements.

Consultation Service in a Home for the Aged[1]

ALICE H. SMITH[2]

Chief, Nutrition Section, Division of Local Health Administration, Michigan Department of Health, Lansing

THE Houghton County Hospital and Infirmary is located outside the village of Houghton, Michigan, high up on a hill overlooking Portage Lake and the village of Hancock. There is a small (and neglected) orchard as well as farm acreage surrounding the institution. A dairy herd, beef cattle, and a flock of chickens have always been maintained to supply much of the food.

With the availability of Social Security funds, more persons have been able to provide for themselves outside of custodial institutions until such time as they need nursing care. Since most institutions of this type operated farms with resident labor, it became unprofitable to operate farms in connection with county hospitals and infirmaries, and Houghton County is no exception. In 1954 a state law was passed which made it mandatory to serve only pasteurized milk in all county hospitals and infirmaries which meant additional expense of operation. Consequently, in May the farm and dairy herd were sold. Beef and pork animals were slaughtered and the meat frozen. The flock was maintained as well as a garden. These changes meant a possible change in food supplies and a change in size of staff.

INSTITUTION POPULATION

This institution cares for approximately 110 persons, about 50 of whom are in the hospital unit. The staff is composed of professional and practical nurses and one orderly. A few of the residents work in the food service and housekeeping departments.

The male population predominates, there being 80 men and 30 women, most of whom are unattached.

Age of residents is shown in Table 1. Seventy-five per cent are over sixty-five years of age. Of the men, 64 are over sixty-five years and one is ninety eight. Twenty-two of the women are over sixty-five and one is ninety-nine. There are two men under forty-five years of age, but no women that young.

TABLE 1

Age of residents, Houghton County Hospital, July 1954

AGE	MEN	WOMEN
yr.		
Less than 60	9	7
61–65	6	5
66–70	8	2
71–75	25	2
76–80	16	9
81–85	9	2
86–90	3	2
91–95	2	1
96–100	1	1

In 1953 there were thirty-nine deaths, most of which occurred within a month after admission. The average length of stay is shown in Table 2.

The Upper Peninsula of Michigan is a veritable melting pot—many of the early settlers having come from European countries to work in the mines, forests, and on the lake. Some idea of the nationality groups can be seen from Table 3. Many of the residents cannot speak, read, or write English.

As one might expect, the work history of the residents is a reflection of the industrial practices of the area. The greatest number of residents were employed in the lumbering business, the next greatest in mining, many in farming, and a few in fishing.

MEDICAL CARE

A local physician provides the medical care. He is on 24-hr. call and visits the institution regularly two

[1] This study was made with the approval of the Committee on Institution Feeding of the Food and Nutrition Board, National Research Council. Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 28, 1954.

[2] The author wishes to express her gratitude to the Director of the Houghton County Social Welfare Department, the Superintendent and Matron of the hospital and infirmary, the attending physician, the dietary staff, the nurses, and aides for their cooperation and assistance. Special appreciation is due to Margaret A. Ohlson, Ph.D., Department of Foods and Nutrition, Michigan State College, for her help and cooperation in this pilot study.

TABLE 2

Average length of stay of patients and residents, Houghton County Hospital and Infirmary

LENGTH OF STAY	MEN	WOMEN
yr.		
Less than 1	22	7
1–5	41	12
6–10	9	2
11–15	3	2
16–20	1	1
21–25	1	4
40 or more	—	2

days each week. At the time of admission each resident is given a complete physical examination including a Wasserman and other blood tests as indicated. Additional laboratory work is done if necessary. An X-ray of the chest is taken. This routine check results in the finding of two or three cases of tuberculosis each year.

Because of the physical condition of most of the residents on admission, routine height and weight measurements are not recorded. The patient's general condition is observed, however, and if he seems to be over- or underweight, suitable medication and diet are prescribed. Multi-vitamin preparations are used when prescribed by the physician, but not routinely. Experience has shown that it is extremely difficult to place these individuals on a highly restricted caloric intake. The part of wisdom seems to be to subscribe, at least to a limited extent, to the theory that it is best to "die happy and full."

From these facts, it will be seen that this is the permanent home of many persons of varying backgrounds. The things they have in common are old age and lack of funds, family, and friends. The fact that they are old implies that they have definite and fixed food habits.

CONSULTATION SERVICE

This institution which has been in existence for over sixty-five years came under the management of its third superintendent and matron on January 1, 1953. The new administrators are husband and wife, neither of whom have had any training in dietetics except that received by the wife in her basic nurse's training.

The administration of this custodial institution is the legal responsibility of the County Welfare Department. At the time of the change in management the welfare director requested assistance in menu planning from the nutrition consultant of the Michigan Department of Health. Since the Upper Peninsula of Michigan is serviced by the writer, plans were made for a conference during her next visit to the area.

Rather than have a set of menus submitted, the consultant spent time with the matron explaining the principles of good menu planning and the nutritional needs of aged persons as well as the modification of the normal diet for such therapeutic diets as diabetic and low-sodium. Menus for the following week were developed. The American Dietetic Association booklet, *Eating Is Fun—for Older People, Too*, (1) was reviewed and a copy left.

TABLE 3

Nationality groups represented among residents and patients, Houghton County Hospital and Infirmary, July 1954

NATIONALITY	MEN	WOMEN
Finnish	25	14
Germanic	12	8
English	11	3
French	10	1
Swedish	6	2
Slovenian	5	2
Irish	4	1
Italian	3	1
American Indian	1	1

To learn just how adequate the food supplies were and to gain some knowledge of food costs, it was suggested that the matron might, at her leisure, read the U. S. Department of Agriculture Handbook No. 16, *Planning Food for Institutions* (2). In the event she was interested, the consultant offered to help in establishing records as suggested in the *Handbook* and thus attempt to find some simple way for the person not trained in dietetics to evaluate the nutritional adequacy of the food supply.

The matron was not only interested, but immediately set up such forms and willingly agreed, with the consent of the county welfare director, to participate in a long-range study of the institution's food service. Fortunately, the County Welfare Board and its director also were keenly interested in this institution and the welfare of the patients and residents, a fact evidenced by their willingness to have their food service practices studied.

STUDY PLANS

A long-range plan seemed advisable since:

(a) There were no records of food purchases or costs accessible to the matron which would aid her in food buying.

(b) The farm was to be discontinued.

(c) The number of hospital beds was to be increased.

(d) Items b and c would cause a change in census—both of staff and residents.

Plans were made for the matron to provide the consultant with a record of the amounts and costs of foods used during March, April, May, June, September, and December 1953. This represents the last month of each quarter of the year and the two months when greatest changes would occur in the source of food supplies and in the census.

To establish the necessary procedures for each

month's report, the consultant spent two days at the institution working on inventory, recording monthly purchases and other foods used, and determining the money value of food used. Since this is a tax-supported institution, many surplus foods were used and included in the calculations, as were food gifts. Subsequent monthly visits were of one-day duration or less, since the matron had the inventory and food usage and cost records assembled and ready for the consultant's calculations.

Because the study was made during a period of conversion from a producing to a consuming institution, it seemed advisable to check the purchasing practices a year later. The kinds and amounts of surplus foods available and obtained by the institution were greater in 1954 than 1953, another reason for a re-survey. Also, early in 1954, a new cook was employed. These factors could easily alter the food consumption pattern.

In the meantime, nutritional status studies of an aging population were being conducted by the Foods and Nutrition Department of Michigan State College, and a survey of the Houghton group could add to their growing body of data on this subject. Consequently, plans were made to collect blood samples and record individual dietary intakes on the entire group in the Houghton institution during the first week of October 1954.

FOOD SERVICE EVALUATION

The simplest step in ascertaining the adequacy of a ration is to determine the kinds and amounts of foods used and compare the totals with an accepted standard. The guides or standards used for this purpose were the "Food Plan at Low Cost" and "Food Plan at Moderate Cost" in Handbook No. 16, *Planning Food for Institutions* (2). A work sheet was also developed based on the sample in the *Handbook* and is shown in Table 4.

Comparison of the amounts of foods used with the amounts suggested in the two cost plans is shown in Table 5. It will be noted that the "Leafy, Green and Yellow Vegetable" group never exceeded 53 per cent of the amount suggested in the "Moderate Cost Plan," or 79 per cent of the amount suggested in the "Low Cost Plan." The range in the "Low Cost Plan" was from 35 to 79 per cent of the suggested amount. The group of "Other Fruits and Vegetables" ranged from 55 to 70 per cent in the "Moderate Cost" group and 74 to 95 per cent in the "Low Cost Group." Legumes ranged from 41 to 103 per cent of the suggested amount in the "Low Cost Plan" and from 101 to 227 per cent of the "Moderate Cost Plan." "Flours, Breads and Cereals" ranged from 57 to 79 per cent of the amount suggested in the "Low Cost Plan" and from 70 to 101 per cent in the "Moderate Cost Plan." "Fats" averaged 86 per cent, while the "Sweets" approximated the suggested amounts. There was a wide spread in the food source of ascorbic acid. Thus, the greatest apparent deficiencies were in the groups of "Leafy, Green and Yellow Vegetables," and "Other Fruits and Vegetables". On the other hand, "Milk" and "Meat" were supplied in amounts which frequently exceeded suggested quantities. The amounts of "Potatoes" ranged from 132 to 178 per cent of the "Low" and "Moderate Cost Plans." These are foods of high nutritive value. A comparison of the 1953 and 1954 figures indicates that the only significant changes were a decrease in the "Meat, Poultry and Fish" group and a slight increase in the "Flour equivalent" group in 1954.

The kinds and amounts of foods used were determined to some extent by the facilities for and methods of preparation and service. In this institution, the kitchen is large with adequate range and oven space, but only a minimum of labor-saving devices. There is a walk-in refrigerator adjacent to the kitchen. Frozen food storage space is rented in the community locker plant. Storage for staples is ample but most inconvenient. Future plans call for a remodeling of the food service and storage areas.

This population is a fairly constant one and the food service staff a stable group. Consequently, it was possible to estimate amounts needed so that the use of left-overs was not a problem.

TABLE 4

*Sample work sheet for computation of total quantities of food needed for a month in an institution**

Age and Activity Group	Unit of 10 persons	Leafy, green and yellow vegetable	Citrus fruit, tomatoes	Potatoes, sweet-potatoes	Other vegetables and fruits	Milk equivalent	Meat, poultry, fish	Eggs	Dry beans and peas, nuts	Flour equivalent	Fats, oils	Sugar, sirups, preserves
	no.	*lb.*	*lb.*	*lb.*	*lb.*	*gal.*	*lb.*	*doz.*	*lb.*	*lb.*	*lb.*	*lb.*
Women												
Sedentary												
Moderately active												
Men												
Sedentary												
Physically active												
Total for 1 mo.												
Round to												

* Adapted from illustration on page 18 of Agriculture Handbook No. 16 (2).

TABLE 5

Comparison of amounts of food used with amounts suggested in low- and moderate-cost plans in Agriculture Handbook No. 16 (2)

DATE	PER CENT OF SUGGESTED AMOUNTS USED	
	Low-cost plan	Moderate-cost plan
Leafy, Green and Yellow Vegetables		
March 1953	79	53
April 1953	43	29
May 1953	40	27
June 1953	43	29
September 1953	35	24
December 1953	40	28
September 1954	53	34
Citrus Fruit, Tomatoes		
March 1953	124	104
April 1953	107	82
May 1953	85	65
June 1953	63	48
September 1953	128	98
December 1953	67	51
September 1954	80	63
Potatoes, Sweet Potatoes		
March 1953	137	148
April 1953	145	157
May 1953	138	147
June 1953	139	150
September 1953	137	147
December 1953	165	178
September 1954	132	143
Other Vegetables and Fruits		
March 1953	74	55
April 1953	68	50
May 1953	67	47
June 1953	92	68
September 1953	84	62
December 1953	95	70
September 1954	91	66
Milk Equivalent (gal.)		
March 1953	127	127
April 1953	135	135
May 1953	94	94
June 1953	83	83
September 1953	89	89
December 1953	86	86
September 1954	84	84
Meat, Poultry, Fish		
March 1953	104	72
April 1953	114	79
May 1953	105	73
June 1953	105	73
September 1953	98	68
December 1953	93	64
September 1954	67	46

TABLE 5 (*Concluded*)

DATE	PER CENT OF SUGGESTED AMOUNTS USED	
	Low-cost plan	Moderate-cost plan
Eggs (Doz.)		
March 1953	80	61
April 1953	89	67
May 1953	59	45
June 1953	75	57
September 1953	65	49
December 1953	100	75
September 1954	81	60
Dry Beans and Peas, Nuts		
March 1953	41	101
April 1953	49	108
May 1953	89	197
June 1953	59	136
September 1953	101	227
December 1953	61	136
September 1954	103	211
Flour Equivalent (Bread and Cereals)		
March 1953	79	96
April 1953	60	73
May 1953	64	77
June 1953	57	70
September 1953	74	89
December 1953	72	88
September 1954	76	101
Fats, Oils		
March 1953	84	80
April 1953	77	74
May 1953	87	84
June 1953	88	105
September 1953	98	94
December 1953	79	76
September 1954	91	86
Sugar, Sirups, Preserves		
March 1953	99	90
April 1953	99	90
May 1953	131	119
June 1953	93	85
September 1953	111	102
December 1953	95	89
September 1954	91	91

Work schedules were such that vegetables were prepared shortly before cooking time.

Food service in the dining rooms is family-style, thus keeping plate waste at a minimum. The trays are served from the main kitchen. Bed patients' food likes and dislikes are made known by the nurses to the matron and thus to the dietary staff. Every effort is made to avoid serving foods which will not be eaten and to make simple substitution for those which will be eaten. Dishwashing is done in a section of the main kitchen, making it relatively easy to observe plate waste from trays. Experience has shown that eggs were usually preferred for meals other than

breakfast. They have learned, too, that certain foods are not enjoyed by most of the residents and staff and, therefore, are no longer served.

NUTRITIONAL ACCOUNTING

All dietitians are familiar with the term "food cost accounting." The term, "nutritional accounting," means the application of similar techniques to the nutritive value of the food served.

It seemed quite probable that the so-called "overages" compensated for the "underages." This was explained to the matron, but at a subsequent visit it was learned that this explanation was not convincing and that she was greatly concerned about what she interpreted as her failure to feed the residents adequately. The amounts of food supplies recorded didn't agree with either the "Low" or "Moderate Cost Plans" and this, too, disturbed her. Therefore, a further step was taken and, using Table 5 of the *Handbook*, calculations were made of the nutrients supplied by the foods, and these figures were compared with the National Research Council's Recommended Dietary Allowances, 1953 Revision (3). Adjustment was made for size, age, and activity using the best estimates available.

The nutritive needs of the group were calculated by using the census figures to determine the number of persons according to age and sex and multiplying these by the National Research Council dietary allowance for each nutrient as illustrated in the *Handbook*.

The results of this calculation, shown in Table 6, indicate that in spite of the lack of the suggested amounts of certain food groups—notably leafy, green and yellow vegetables—the kinds and amounts of other foods as purchased and produced resulted in a diet that did meet the nutritional requirements of the group. Protein, calcium, and riboflavin were supplied with generous margins of safety during March and April when milk was obtained from the hospital's own dairy herd. The elimination of the herd was not nutritionally serious, since adequate amounts of fluid milk were purchased and non-fat dry milk solids, a surplus commodity, were obtained and used in food preparation.

One objective of this study was to try to find some simple device which the person not trained in dietetics could use in evaluating institutional food service. The "Moderate" and "Low Cost Plans" proved to be a first step, but it was necessary that interpretation of the results be done by someone with knowledge and experience in foods and nutrition, a service which any hospital dietitian or public health nutritionist should be able to supply. The most assuring and convincing evidence is that obtained by calculation of the nutritive value of the food supplied and comparing the results with the Recommended Dietary Allowances. This is a procedure few, if any, matrons or county hospital superintendents could or should try to do. Again, the services of the trained person are indicated.

DISTRIBUTION OF THE FOOD DOLLAR

Nutritional accounting can be very revealing and is even more valuable if accompanied by food cost accounting. If the food supplies were consistently adequate nutritionally, it would seem safe to assume that the distribution of the food dollar spent for such supplies might be a fair guide or index of the adequacy of the institution's food service. Consequently, the food costs were calculated in terms of the percentage of the total spent for each food group, and the results recorded in Table 7. It will be noted that there was a fairly consistent pattern of expenditure during the period studied. The percentage spent for "Leafy, Green and Yellow Vegetables," ranged from 2 to 5 per cent; "Citrus Fruits and Tomatoes," 4 to 7 per cent; "Potatoes," 1 to 3 per cent; "Other Fruits and Vegetables," 7 to 9 per cent; "Legumes," 1 per cent; "Milk," 14 to 22 per cent with an average of 19 per cent; "Meat, Fish, and Poultry," 25 to 32 per cent; "Eggs," 5 to 8 per cent; "Breads, Flours, and Cereals," 9 to 14 per cent; "Fats," 3 to 12 per cent; "Sugars," 2 to 3 per cent; and from 5 to 11 per cent for "Miscellaneous" items, such as tea, coffee, and seasonings.

TABLE 6

Percentage of National Research Council Recommended Dietary Allowances (3) supplied by food at Houghton County Hospital and Infirmary

MONTH	PERCENTAGE OF RECOMMENDED DIETARY ALLOWANCES								
	Energy	Protein	Minerals		Vitamins				
			Calcium	Iron	A*	Thiamine	Riboflavin	Niacin	Ascorbic acid
March 1953	104	140	154	110	164	116	140	124	144
April 1953	102	142	163	104	145	113	146	126	127
May 1953	96	120	115	96	122	103	106	117	105
June 1953	91	116	107	95	127	99	106	117	98
September 1953	104	125	117	104	129	112	114	126	130
December 1953	92	117	109	98	129	103	90	115	105
September 1954	95	112	119	93	111	102	109	106	107

* No allowance made for carotene.

TABLE 7

Percentage distribution of the food dollar

FOOD GROUP	FOOD DOLLAR							"LOW TO HIGH" RANGE AS REPORTED BY SHERMAN (4)
	March 1953	April 1953	May 1953	June 1953	September 1953	December 1953	September 1954	
	%	%	%	%	%	%	%	%
Leafy, green and yellow vegetables	5	3	3	3	2	2	3	—
Citrus fruit, tomatoes	5	5	5	4	5	5	7	—
Potatoes, sweet potatoes	2	2	2	2	1	1	3	10–20
Other vegetables and fruits	7	7	7	9	7	8	8	—
Dry beans and peas, nuts	1	1	1	1	1	1	1	—
Milk equivalent	22	21	20	20	17	19	14	7–14
Meat, poultry, fish	27	31	32	31	27	25	18	25–40
Eggs	6	6	5	7	6	8	6	4–8
Flour equivalent (bread and cereals)	12	9	11	10	12	12	14	14–20
Fats, oils	3	7	7	6	10	9	12	7–14
Sugar, sirups, preserves	3	2	3	3	3	2	3	4–8
Miscellaneous	7	6	5	5	8	8	11	4–8

The 1954 figures show a decrease for "Milk" and an increase for "Fat" expenditures, which was undoubtedly due to the increased use of non-fat dry milk solids and butter. Of special interest is the fact that in September, 1954, 21 per cent of the total food cost was accounted for by the value of surplus commodities and 10 per cent by foods produced at the institution (eggs and garden produce).

Probably the first attempt to relate nutritional adequacy to the distribution of the food dollar was that reported by Sherman (4) a quarter of a century ago. All available data at that time indicated that the typical American food budget was as follows:

15 per cent for fruits and vegetables
10 per cent for milk, cream, and cheese
30 to 40 per cent for meat, fish, and poultry
5 per cent for eggs
15 to 20 per cent for cereals and grains
10 per cent for fats
5 per cent for sugars
5 per cent for miscellaneous items

Data from 224 typical American families were classified by Sherman according to low, medium, and high percentage of expenditure. The range from low to high compared with the percentage distribution of the food dollar at the Houghton institution is also shown in Table 7. It will be noted that the Houghton figures for "Fruits and Vegetables" approximate the high level of 1931 and the expenditure for "Milk" is about double. It is of interest that the percentage spent for meat at Houghton never was as high as the highest level of a quarter of a century ago. At that time, Sherman wrote ". . . it is plain that our present knowledge very clearly indicates that the average or typical American food budget can be easily improved by giving greater prominence to milk, vegetables, and fruit, the money needed for this being obtained if necessary by reducing the expenditure for meat." The Houghton institution figures indicate just such improvement, a significant fact when one recalls that the population being fed at the institution undoubtedly had food habits which conformed to the pattern of the 1931 era.

CONCLUSIONS

Although it is extremely difficult to measure the results of consultant service, certain facts may be recorded. In this institution, menu planning has been improved and is now done in advance. Food cost records have been established and better buying practices have been used. Ways have been found to use a maximum of surplus foods.

One objective of this study was to find simple evaluation tools or guides which could be used by the person not trained in foods and nutrition for judging the adequacy of an institution's food service. This study seems to indicate that what appears to be an atypical situation as judged by commonly accepted standards of food distribution can be as adequate as the typical situation. It has become apparent that suggested plans or standards must be interpreted with conservatism. The interpretation of "overages" as well as "underages" in food groups may need to be made by a dietitian or nutritionist.

Nutritional accounting, a service only the consultant can render, may be advisable or necessary to demonstrate to the institution's administration that food supplies are or are not adequate for the group to be fed.

With a stable price structure for food, it is possible to use the distribution of the food dollar as a gross guide for judging nutritional adequacy.

Since the "proof of the pudding is in the eating," the next bit of proof or evidence of the adequacy of this institution's food service will be measured in terms of the nutritional status of the residents. Blood samples have been taken and the results of the analyses will be reported by the Foods and Nutrition Department of Michigan State College at a later date. Individual dietary intake records obtained at

the time the blood samples were taken indicate that the food habits reflected the kinds and amounts of foods used each month.

This is a group of meat, potato, bread, and milk eaters. These foods appear to be eaten in sufficient amounts to supply all the nutrients necessary for the age, sex, and degree of activity of the group. As one might expect, the bed-ridden patients eat less bread and butter than those who eat in the dining room. Since the same menu is served to all, differences are chiefly those of quantity.

In going into this institution as a consultant, the easiest thing to have done would have been to suggest a purchase guide of kinds and amounts of food such as is found in Handbook No. 16 (2). The appearance, vitality, and health records of the residents indicated that the part of wisdom was to evaluate present practices before making any recommendations. Acceptance of, and pleasure in food is an important part of the social rewards of institutional life. The fact that this institution has been able to provide adequate food and still recognize the dietary mores of the group is a compliment to both their intelligence and their sensitivity.

REFERENCES

(1) Eating Is Fun—for Older People, Too. Chicago: American Dietetic Assn., 1952.
(2) Lifquist, R. C., and Tate, E. B.: Planning Food for Institutions. U.S.D.A. Agriculture Handbook No. 16, January, 1951.
(3) Food and Nutrition Board: Recommended Dietary Allowances, Revised 1953. Natl. Acad. Sci.—Natl. Research Council Pub. 302, 1953.
(4) Sherman, H. C.: Food Products. 2nd ed., rev. New York: Macmillan Co., 1930.

WORLD FOOD SUPPLIES

Social and cultural statistics for more than 140 countries have recently been published in the *1954 United Nations Statistical Yearbook*. Figures on food supplies and consumption are of particular interest to nutritionists and dietitians.

Except for Belgium-Luxemburg, France, Iceland, and Sweden, all fifteen European countries for which data are given had per capita meat supplies in 1952–53 which were less—often appreciably less—than before the war. In the prewar period (1934–38), highest annual per capita meat supplies were enjoyed by Denmark (75 kg.), followed by the United Kingdom with 64 kg., the Republic of Ireland with 55 kg., and France and Switzerland with 53 kg. each. In 1952–53, France had moved up to first place with 78 kg., followed by Iceland (63 kg.), Denmark (59 kg.), and the United Kingdom and the Republic of Ireland with 53 kg. each.

Most European countries appear to have raised their supplies of milk (for consumption fresh and in dairy products other than butter) above the prewar average. Compared with the 1934–38 average level, the 1952–53 per capita milk supplies had risen from 136 to 178 kg. in Belgium-Luxemburg, from 195 to 212 kg. in Denmark, from 313 to 390 kg. in Iceland (1950–51), from 150 to 195 kg. in the Republic of Ireland, from 74 to 95 kg. in Italy, from 251 to 328 kg. in Norway, and from 152 to 202 kg. in the United Kingdom.

Canada had about 23 per cent more meat and 11 per cent more milk per capita in 1952–53 than on the average during 1934–38, and the U.S. (in 1952) about 17 per cent more meat and 16 per cent more milk supplies. The per capita supplies of cereals in these countries, (in the form of flour) were 17 to 18 per cent, respectively, below the prewar average.

The composition of national diets varies widely according to national customs, climatic conditions, and levels of living. Annual per capita supplies of meat in recent years were over 100 kg. in Argentina, Australia, New Zealand, and Uruguay, and around 75 kg. in Canada and the U.S., whereas they were less than 5 kg. in Ceylon, India, and Japan; not more than 15 kg. in Egypt, Israel, Greece, and Portugal; and under 20 kg. in Italy and Turkey.

Among the low meat-consuming countries, annual supplies of cereals (flour and milled rice equivalents) were high, exceeding 170 kg. in Egypt and Turkey and 150 kg.—about double the corresponding figure for Canada and the U.S.—in Japan, Greece, and Italy.

The percentage of daily calories derived from foodstuffs of animal origin (meat, eggs, fish, milk, cheese, butter, and so on) was less than 10 per cent in Egypt, Ceylon, India, Japan, Turkey, and Greece, and did not exceed 15 per cent in Italy and Portugal. In New Zealand, however, it amounted to almost 50 per cent; in Canada, the U.S., Iceland, Norway Sweden, and Australia, about 40 per cent; and 33 to 36 per cent in most other European countries.

Current Comment

The Shared Dietitian[1]

BETTY HOOVER

Dietitian, Rush Memorial Hospital, Rushville, Indiana, and
Fayette Memorial Hospital, Connersville, Indiana

Five years ago I left a 150-bed hospital in Richmond, Indiana to work at Rush Memorial Hospital in Rushville, Indiana, 38 mi. southeast of Indianapolis. Rush Memorial was then under construction, and I was given the responsibility of setting up the dietary department. Two days a week for about three months were sufficient to accomplish its organization. For me, this amounted to semi-retirement.

But my semi-retirement was short lived, as I was approached by an enterprising administrator of a hospital 17 mi. away and persuaded to help with the dietary department there another two days a week. This added responsibility was my start into a new and rather untried field of dietetics, that of the shared dietitian—one who serves two or more hospitals routinely on a part-time basis.

Throughout the country there are many small hospitals, often located rather close together, which are without professional dietary personnel. These are the 50- to 75-bed hospitals which cannot afford a full-time dietitian and do not have enough actual dietetic work to warrant more than a part-time dietitian. Many of these hospitals are eager to acquire the services of an A.D.A. dietitian, and I stress the A.D.A. Apparently home-economics-trained personnel and non-professional employees are more generally available, but even in small hospitals, the administrators are looking for qualified members of the profession, both from a practical standpoint and with an eye to the future for possible accreditation by the Joint Commission on Accreditation of Hospitals.

Until I became a shared dietitian, I had always felt that members of the profession were somewhat limited as to where they could work. Unlike nurses or school teachers, we have not been able to work in smaller communities or rural areas where there is seldom a hospital of sufficient size to support a full-time dietitian. The shared-dietitian plan obviously opens many new areas throughout the country to interested A.D.A. dietitians and at the same time brightens the accreditation prospects of many progressive small hospitals.

What does a shared dietitian do? Writing in the September, 1954, issue of this JOURNAL (1), Thelma Pollen has given a very complete description of this kind of position. The work of a dietitian shared among two or more small hospitals is very similar to that of one serving as the only dietitian in perhaps a 125-bed hospital.

The shared dietitian must meet with the governing board and the administrator of each hospital to establish an understanding about her duties and to assure that she will have adequate help in fulfilling them. The administration must be prepared for at least a temporary increase in the cost of operating the dietary department to provide for better nutrition, proper supervision, and often better sanitation. The salary should be agreed upon, and the shared dietitian should not be considered a part-time employee. She should have the vacation and sick-leave benefits of a full-time employee plus any fringe benefits.

The shared dietitian is a policy maker. In each of her hospitals, she is responsible for interdepartmental relationships, employee training, and menu planning—both for general and modified diets. The shared dietitian, however, must delegate as many of her duties as possible and devote a proportionally larger part of her time to training and supervision. It is mainly in this respect that her professional activities differ from those of the dietitian who serves a single but larger hospital.

DIFFERENCES AND SIMILARITIES

At present I serve two hospitals: Rush Memorial, a 52-bed, county-tax-supported hospital, and Fayette Memorial Hospital in Connersville, which is a 75-bed, privately-endowed institution. On Monday and Friday I work in Rushville, and on Tuesday and Saturday in Connersville.

One would imagine that two hospitals located in adjoining counties of approximately the same size and operating under the same regulations would be fairly easy to standardize. Whenever and wherever it is possible to standardize we do so, and some features readily respond to standardization. At each hospital the medical staff has approved the same house diet. Both have adopted the Meal Planning and Exchange Lists for handling diabetic diets. Food is purchased from the same wholesale houses, and buying policies in general are the same. Both

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 28, 1954.

hospitals have decentralized tray service, and job analysis at one hospital could well apply to the other.

The biggest difference is in the menu planning. Food preferences vary sharply between the two hospitals. For example, apple crisp, a strong favorite at one, is rejected at the other when made from the same recipe and of equal quality. The cooking and baking facilities, the budget, the capabilities of the cooks, and the days-off schedule of the employees make it almost impossible to use the same menus without much modification. The most practical method is to work out a master menu for each hospital. Rush County is famous for its hogs, and pork appears on the menu at Rush Memorial more frequently than on most hospital menus. We do take the precaution of preparing a second meat for those who are not able to tolerate pork. Rushville is a very Protestant community, which will accept fish or a meat substitute only once a day on Friday; we serve meat at the other meal and, of course, are very glad to substitute from the cafeteria for our one or two Roman Catholic patients.

I have found that menu writing is one duty always happily delegated to the dietitian. Most employees are very willing to prepare any foods on the menu and often will make excellent suggestions, but none of them want the responsibility of menu writing, which is done more quickly by the dietitian and can be done well in advance. The master menu will help the kitchen supervisor through a prolonged absence of the dietitian.

PROBLEMS

The shared dietitian faces numerous problems when she first begins to work at a hospital. The dietary department has no doubt been functioning for many years and will probably continue to function after she is no longer working there. Wherever there is a distance for personnel to travel, there is the risk of absenteeism. The dietitian's job should be to train the employees to carry on in her absence. They should be able to manage adequately both during a brief, unexpected absence of the dietitian or in the event that she should leave the staff permanently. Until we have a supply of shared dietitians for these hospitals to draw upon in the event the present one leaves, we must not put the hospital in a position of being too dependent on the dietitian. I assure you that she will be missed, and the department will not function as smoothly without her, but in fairness to the patients, the personnel must be able to carry on alone to some degree in the event of her absence.

Likely no house diet has been established. If there is one, it may have as many versions as there are doctors and nurses. A dietitian must set up the house diet which will be most generally accepted by the medical staff and have it approved at a staff meeting. It is her responsibility to explain the house diets to the nurses and to instruct the kitchen help. This endears the dietitian to all as it eliminates some of the confusion arising over trays. By writing the menus from these established house diets, the dietitian improves the nutrition. Without some sort of a nutrition course, the cooks can hardly be expected to plan balanced meals, and the menus often tend to be monotonous, repetitive, and very uninteresting.

MODIFIED DIETS

Modified diets in a small hospital are another big problem. Somewhere in the dietary department one can find an alert person who can be trained for therapeutic diets. She can learn to write the diets and be responsible for the diet trays. Acquired training and ability to do this responsible work imparts a certain amount of prestige to the employee who both lives and works in the small community and whose activities are generally known.

At Rushville, we have an extremely capable tray girl. She is in her early thirties and has never been to high school. She has been accustomed to housework and to earning her own living from her early teens, and she has had three years' experience as a tray girl in a hospital comparable in size to Rush Memorial. She came to us voluntarily shortly after it opened and immediately showed a willingness to take on responsibility and further training. Training consisted of having her write, to begin with, our low-sodium diets and then our other non-calculated diets progressively. After about a month, we instructed her in writing diabetic diets that had been established by the dietitian. Copies of each type of modified diet used in the hospital are placed in our "diet manual."

We also have basic diabetic diets which serve surprisingly well until I can get the diet established. A card file of diabetic patients who have previously been patients in the hospital is available for ready reference. This employee, whom I consider typical, has responded so well to training and proved to be so alert and conscientious that I am called only rarely and then only for something that is really unusual.

One procedure that has been found advisable is to instruct the patient about his home diet early in his hospital stay, and at the convenience of the dietitian. The doctors willingly cooperate with the shared dietitian by planning their dietary work to coincide with the days when she is on duty in their hospital. If necessary, in the absence of the dietitian, the tray girl provides the patient with the appropriate mimeographed sheet and answers his questions. However, I have found that this seldom happens, and only with those patients whose stay is too short to coincide with any of the days when the dietitian is on duty in the hospital and available for instructional work.

THE KITCHEN SUPERVISOR

Buying is another problem in the small hospital. The policies can be set up gradually, and after the kitchen supervisor is trained, she can take over ordering food and checking supplies.

The kitchen supervisor is the key employee in the efficient operation of a shared-dietitian plan. This cannot be over-emphasized. In a small hospital, she will usually be the first cook. She has the responsibility of the dietary department in the absence of the dietitian. She must be willing to work under the dietitian and eager to accept all the help the dietitian can provide. She can be a home economics graduate, or more likely she will be a capable homemaker who has run an immaculate, efficient home of her own. This, of course, implies a mature woman whose children, if any, are at least school age or older. Such a person will likely be one who enjoys respect in the community with regard to her home and family and her own capabilities. Women of this type can usually be found in most communities progressive enough to support a hospital.

MAKE HASTE SLOWLY

It is apparent, I believe, that the shared dietitian cannot be a perfectionist. One must be able to see improvement and be satisfied with one step at a time. On a part-time basis, things will necessarily take much longer than if the hospital had daily supervision. Progress must be slow if confusion is to be avoided. While we are all encouraged to look forward, in this type of work, one must look back continually to see how much of the road has been covered and to evaluate one's progress. The road ahead is certain to be long, but the backward glances encourage one to go ahead with another project. The dietitian must be adaptable and able to work without too rigid a routine in going from one hospital to another.

The hospitals could be vastly different in spite of their proximity. One would be foolish to attempt this type of work without a sense of humor, but in this respect I doubt that this phase of dietetics differs from any other. Above all, the dietitian must have patience with the employees and with herself. The shared dietitian should have had four or five years' experience in the field, some of it preferably in a small hospital, perhaps as the only dietitian.

ADVANTAGES OF THE SMALL HOSPITAL

Most of us in hospital dietetics have done our work in large hospitals and are frequently employed in institutions larger than the ones in which the shared dietitian works. There is much to be said in favor of working as a dietitian in a small hospital. It may often seem impossible that a hospital could function well without constant dietary supervision, without a large medical and nursing staff, and with only a minimum of equipment. The small hospital offers close doctor-patient-dietitian relationships, enabling the dietitian to give better individual dietary help. One cannot help being impressed by the "family" feeling. Everybody pitches in. In an emergency, the nurses may help set up trays and the office personnel put the dishes through the dish machine. One night when a heavy snow was predicted, two of our cooks packed their overnight bags and spent the night at the hospital to assure the patients their food in the morning.

The doctors and nurses are all well trained and often put forth additional effort to keep informed and abreast of city hospitals. These smaller hospitals often have top men from the nearby cities for consultation or surgery. Frequently a doctor will come to my office and say, "I have a patient with such and such a disease. We have always treated them with this or that diet, but is there anything new in the dietary treatment that I don't know? Can you help me?" I, in turn, bless the dietary department of the Indiana Medical Center in Indianapolis for its always-available assistance.

These smaller hospitals must not be underestimated. Rush Memorial Hospital with 52 beds was this year given a 95 per cent rating by the Joint Commission on Accreditation of Hospitals, and the Connersville hospital is working toward becoming accredited. The staffs of these small hospitals are often very progressive, and I have found that the doctors depend on the dietitian to keep them informed on dietary treatment. They appreciate the dietary department and understand its problems. The doctors are always our strongest supporters, and, of course, the cooks play a part in maintaining this happy relationship.

The cooks in the small hospital are usually homemakers who are good cooks and who like to cook. We find they are more easily trained to our way of operating if they have not had experience in some of the local restaurants, or if they have not had quantity cookery. These women are known in the community as good cooks, the community knows they are cooking at the hospital, and they are eager to maintain their reputations. They will accept short cuts only if they do not impair the quality of the product. We follow the policy that everything on the menu must be prepared and nothing is to be omitted. They have the privilege, however, of adding hot rolls, biscuits, or cornbread, which they do with surprising frequency. A chocolate pudding may have a graham-cracker crust and a 2-in. meringue when it reaches the patient. Then the cooks will say, "We had a little extra time today and they did enjoy it." Occasionally, and just for fun, I will not specify dessert on the menu knowing from experience that it will not be ice cream, fruit, or gelatin. They invariably prepare something more complicated than I would have asked them to make.

NOW! PROVE TO YOURSELF:

Here's a Whole Protein Supplement THAT TASTES AS GOOD AS ICE CREAM!

MORE NUTRITIOUS THAN EGGNOG . . . AND COSTS LESS TO SERVE!

Meritene®

WHOLE PROTEIN SUPPLEMENT

NOT ADVERTISED TO THE LAITY

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

Compare the nutritive value of Meritene vs. Eggnog

	8 oz. EGGNOG*	8 oz. MERITENE MILK SHAKE
Protein	14.6 gm.	17.9 gm.
Fat	15.0 gm.	9.5 gm.
Carbohydrate	24.7 gm.	28.6 gm.
Iron	1.5 mg.	4.46 mg.
Calcium	.31 gm.	.58 gm.
Phosphorus	.33 gm.	.46 gm.
Vitamin A	940 I.U.	2380 I.U.
Thiamine	.14 mg.	.77 mg.
Riboflavin	.56 mg.	1.64 mg.
Ascorbic Acid	3.0 mg.	25.7 mg.
Vitamin D	31 I.U.	161 I.U.
Cholesterol	299 mg.	38.4 mg.
Calories	291 mg.	270

Meritene Milk Shake costs 1 to 4¢ less per serving than eggnog

*Nutritive value of Eggnog from Bowes and Church, 7th Ed. 1951.

Meritene® *—a product of* **THE DIETENE COMPANY**

Available in plain and chocolate flavors from your wholesaler in 1 and 5 lb. cans. Direct from manufacturer in 25 lb. cans. Priced as low as 69¢ per lb.

MERITENE mixes with milk in seconds (and *stays* mixed) to provide ideal between-meal nourishment for hospital and convalescent patients. One eight-ounce serving of MERITENE Milk Shake provides over one-quarter the N.R.C. Daily Dietary Allowances for the average active man in protein and all the essential vitamins and minerals. Have a MERITENE Milk Shake at our expense—just mail the coupon below—and prove to yourself that MERITENE is a high protein supplement that actually *tastes good!*

HAVE YOU TASTED MERITENE?

FREE ONE-POUND SAMPLE available, plus a supply of these comprehensive MERITENE Diet Sheets: • Diabetic Diet • High Caloric diet (3585 calories) • 2000 Calorie Diet with restricted sodium content • Bland Low-Cellulose Diet • Ulcer Diet • Diet for diseases of the Liver.

CLIP AND MAIL FOR FREE SAMPLE

MERITENE, c/o The Dietene Company MD-45
3017 Fourth Avenue So., Minneapolis 8, Minn.

Name _____

Address _____

City _____ Zone ____ State _____

Because of Custom regulations, offer limited to U.S.

A surprising thing about the small hospital is that the Medical Society frequently serves as our employment agency. Who knows better than the family doctor what good woman needs to work, who is immaculate, who is physically and emotionally able to work in the kitchen, who is cooperative, and who would make a good employee? Our doctors are constantly interested in making sure that the dietary department receives the best employees in the community.

I have enjoyed the unique experience of working simultaneously in two greatly different hospitals. At Rushville, where I was on the staff before the hospital opened, the house diets, the modified diets, the buying policies, and job analyses were all established in advance. Rushville has a new kitchen with adequate equipment. The employees have learned only one way of operating and have never had to adapt themselves to the policies of another dietitian. In addition, we have not lost an employee in three and a half years, and our kitchen supervisor, who is a home economics graduate, has been with us since the hospital opened.

The board treats the dietary department as its public relations agency. The standards for our meals were set, and any rising cost in food is handled by increased rates if necessary. The quality of the food is never sacrificed. In the four years the hospital has been in operation, the board has yet to receive its first food complaint.

At Connersville, the hospital is twenty-five years old and has never before had a dietitian. This is quite a different situation. Progress at Rush Memorial has been generally more rapid and satisfactory than at Connersville. Since my home is in Rushville, I am undoubtedly more accessible to the Rush Memorial than to the Connersville personnel, even though the actual time spent at the two hospitals is the same. A chance, off-time meeting in the normal course of community life with someone from the dietary department may often result in a quick settlement of some problem which would otherwise await my appearance at the hospital on the established day. In addition, from the start it was necessary to build up the dietary department at Connersville, and many old customs had to be revised. Work at Connersville was begun about five years ago, carried on for almost two years, and then discontinued for about two years more both because I thought it would be impossible for me to take care of both these hospitals and because of my young son who is now three years old. Work at Connersville was resumed a few months ago and is now going forward with more satisfactory progress than we were able to achieve in our first attempt. This is primarily due to the fact that we have been able to obtain a good kitchen supervisor, in this case an expert homemaker with a grown family, who is now free to work outside of her home.

All of the improvements made in our earlier attempts at Connersville were continued in effect through the interim period. We have now established a house diet approved by the medical society and have discontinued local grocery store buying and buy from wholesalers. We have a special girl to write modified diets. The employees no longer cook the evening meal in the morning. They are on straight hours with a better distribution of manhours. The menus are written in advance and followed, and standardized recipes are used. They are using decentralized tray service instead of trying to serve trays in the kitchen, placing them on a cart for distribution throughout the hospital possibly a half hour later. One cannot help feeling a tremendous satisfaction as one sees each small advance achieved.

ADVANTAGES OF BEING A SHARED DIETITIAN

There are many advantages to this type of work. The satisfaction one derives is only one. The dietitian is invariably welcomed and given a great deal of consideration. There is variety—no two days have ever been the same. The dietitian is more independent and able to work out her own hours and can keep her week-ends free. She can reduce or increase the number of her working days with a minimum of inconvenience to the hospital. A small hospital is willing to pay more proportionally, since the total financial burden is shared with other hospitals.

One becomes a shared dietitian in any of several ways. The dietitian may be working part-time in her own community. A nearby hospital becomes interested in the work, and she adds a second hospital and perhaps even a third. In Indiana, the nutritionist with the State Board of Health knows each hospital in the state and where it is practical to have a shared dietitian. In other states, the Department of Public Health can be of service to the dietitian in selecting a location. The American Dietetic Association is taking a great interest in this program and through its Credentials Service one could no doubt find several locations where administrators are interested in employing a shared dietitian.

Twenty-five per cent of the A.D.A. membership is comprised of homemakers. Inevitably, some of this 25 per cent can be found living in the smaller communities. This type of work is a definite challenge to these homemakers who would like to be of service to their communities and who could acquire more responsibility outside of their homes as their family responsibilities decrease.

REFERENCE

(1) POLLEN, T.: *Needed* by small hospitals: The *shared* dietitian. J. Am. Dietet. A. 30: 886, 1954.

WESSON OIL
America's Largest Selling Brand
5 GALLONS
Wesson Oil
with the handy PORISCOPE
NO DRIP! NO WASTE!
KEEPS CAN CLEAN!
Pull it out to pour—
then push it back out of sight!
Screw cap protects contents!
THE WESSON OIL PEOPLE
New Orleans, La.
© 1954 BY WESSON OIL & SNOWDRIFT SALES CO

Serving the Aged

SOPHIA HEEND

Orthodox Jewish Home for the Aged
Chicago, Illinois

In a study made in 1951 (1), it was found that there were at least 75,922 residents and staff members in homes for the aged in the twenty-one states reporting. In only nine of these states, however, were there known to be dietitians employed in these institutions—the total number employed being 32½. With the number of people who reach the age of sixty-five constantly increasing, there will be a continual increase in the number of homes for these people. The number of dietitians employed in homes for the aged may also increase, if they are attracted by the modern and successful programs of medical and psychiatric care and rehabilitation of older persons now being carried out by progressive administrative policies.

I joined the staff of the Orthodox Jewish Home for the Aged in Chicago, a most progressive institution, a number of years ago as its first dietitian. The Home, which is community supported, had that year observed its fiftieth year of operation and had just completed the construction of a new wing to accommodate 100 additional residents, bringing the total to 250.

I found that the food service here was essentially the same as that of any other type of institution, and most of the problems of the dietary department were similar. However, I learned, too, that in addition to the routine management of the food service department, the problems which aged persons presented as permanent members of a large group had to be considered. Thus the dietitian needed an understanding not only of the physiologic food requirements of the residents, but also of the psychologic problems that exist or that may arise, such as their attitudes toward food and their acceptance of the food served.

PSYCHOLOGICAL OUTLOOK OF THE AGED

One of my first tasks was to try to learn what made the residents "tick" and why they "ticked" the way they did. I learned that when an aged person was admitted, he brought with him many frustrations and sublimations. Some of these had arisen as a result of the process of aging. He was, more often than not, emotionally insecure, with feelings of being unwanted and unloved, of being useless. He had no spouse and for various reasons, his children could not or would not maintain him in their homes. He was insecure economically and suffered deprivation and impoverishment. If he had lived in a room by himself, that environment and the lack of sufficient funds had precluded obtaining proper food, medical attention, and nursing care.

He was a maladjusted, unhappy, anxious individual. He usually resisted change, seemed inflexible, and tended to develop rigid character traits. The new and unfamiliar seemed to disturb and frighten him, and he frequently resented restrictions and regulations that were necessarily a part of congregate living. He had to make many adjustments in and to the institutional environment, among them being his three daily meals. A criticism regarding the food was often an indication of a disturbance totally unrelated to the food, its preparation, or its service.

The resident's emotional upsets were often closely related to the normal physical deterioration which occurs with aging. Interference of mastication results not only in digestive disturbances but also prevents the older person from eating all the foods necessary for good nutrition. He does not enjoy his food so much because of poor-fitting dentures or no dentures at all. Because there is less saliva, the feeling of dryness in the mouth is common. The functioning of the digestive, absorptive, metabolic, and eliminative processes are weakened in advanced age. Therefore, meals must be carefully planned to retard the effects of these handicaps.

CHEERFUL WAITRESSES

I came to realize early that the waitresses in the dining rooms play important roles in facilitating and hastening the adjustment of the residents to the institutional environment, so strange and new to them. They are made to feel at home in the dining rooms. They have their own regular places at the tables for four; their table mates are permanently assigned; and the same waitresses serve them. The waitresses take a personal interest in their charges, soon becoming familiar with the kind of bread they prefer, the beverage they like best and for what meal, and whether they are large or small eaters.

Many of these people before entering the Home ate only two meals a day. Thus it was necessary to encourage them to come to the dining rooms for the three meals, even though they may have complained of lack of appetite and interest in the third meal. However, an early fear of losing their seats in the dining room has led many to come to breakfast, which they formerly had skipped.

There is close supervision of the waitress' contacts with the residents and their conduct with them at meal times. Frequent meetings are held with the dining room staff to discuss their manner of approach, their attitudes and responses to the various residents. Interpretation of the normal processes of aging helps them to understand and be patient with the occasional fractious individual—which may mean the difference between food acceptance and refusal during emotional upsets. Our staff psychiatrist and

AMAZING COFFEE DISCOVERY

Now Packed for Quantity Brewing!

A Product of General Foods

Not a powder! Not a grind! But millions of tiny "FLAVOR BUDS" of real coffee...ready to burst instantly into that famous Good-to-the-Last-Drop flavor!

Only this entirely new *kind* of coffee gives you all these advantages:

- 10% greater yield per pound-equivalent pack!
- Cuts brewing time and labor costs 75%!
- Any worker, trained or not, can brew it perfectly!
- Uniform cup quality—ends "in-and-out" batches!
- No more "staling" problems—saves storage space!
- No more coffee grounds—makes cleaning a cinch!
- No more urn bags, upper bowls, rings or filters!
- Can be brewed in small batches anywhere, anytime!

See your Maxwell House Man today, or write: Maxwell House Div., H&R Dept., Hoboken, N. J.

social worker are available for counsel and guidance in meeting such situations as they occur. A series of psychiatric seminars are held for the staff and have proved of great value and interest to the non-professional as well as to the professional workers. Some of the dietary staff come in on their days off to attend these seminars, and tape recordings are made of the discussions and played back for the absent workers or for the purpose of study.

PROBLEMS OF CONGREGATE LIVING

We all know the problems involved and the effort expended in attempting to satisfy the short-term hospital patient. His likes and dislikes can generally be satisfied through the selective menu or by individualized attention. The permanent resident in a large home who is only apparently well, however, has neither the benefit of a selective menu nor the individual attention which he might receive in a hospital. He does not receive the same attention to which he was accustomed in his own home.

He may eat in the dining room with 150 other aged men and women. This obviously is not conducive to individual service. Just as in a large family of many children, one child cannot be singled out for special attention without arousing ill feelings or jealousy in the others, so it is with the aged resident eating with so many others in the same dining area. Congregate living does not contribute to making people "special" at any time or place, normally speaking, and any manipulation of the staff for this purpose is discouraged.

However, as mentioned earlier, his preferences for bread, breakfast cereal, and beverage are known and met, as well as size of portions and requests for second helpings. This may be comparable to the situation in many hospitals where only limited menu selection is practiced. In addition, residents' favorite dishes are frequently included in the menu.

TEACHING THE RESIDENTS

Meeting with the residents to interpret the procedures and problems of the dietary department has helped to make them more understanding. Basic principles of nutrition and the reasons for dietary modifications required by some of the people are also discussed. The over-all medical restrictions of the diets for aged persons have also proved of interest at these sessions. They learn why it is that the food is less highly seasoned than they have hitherto been accustomed; why little or no fried foods are served; why spicy foods are eliminated from their diets; why the heavier meal of the day is served at noon instead of in the evening; and why mid-meal and before bedtime snacks are available to those who wish them.

They are reminded that their food habits must change in this or any communal living arrangement. People here have a dozen or more different national origins, each with its characteristic type of cookery perpetuated in their homes in this country for many years before coming into the Home. It is also explained to the residents that cooking for four hundred must involve different procedures and methods from that of preparing family-size recipes and menus.

INTRODUCING NEW FOODS

Every effort is made to offer foods of nutritional value in an acceptable form. One of my first tasks was to make an analysis of the old menus. In general, I found that meals had been of high caloric value, derived chiefly from cereals and cereal products which the residents seemed to prefer because they were easily masticated. In addition, an inadequacy in several of the vitamins seemed apparent. Former menus had included few vegetables, no mixed dishes or casseroles, no cream soups, and no puddings.

The residents' needs for minerals, vitamins, proteins, and especially calcium—all of which are increased for this age group—made it necessary to introduce foods high in these elements and serve them as often as possible. Obtaining acceptance has been a slow educational process, but we have gradually achieved some measure of success in using new menu items or variations of old dishes. Food waste does pose a problem when new items are used, but in the interest of developing new food habits, we consider it a necessary evil.

The staff is instructed to observe and report the foods residents like best, and these are served more often. When a new dish is served, a careful check is made on its acceptability and comments are noted. Moderate rejection the first time a dish is served does not eliminate it entirely; it is repeated on the menu once or twice at wide intervals and tried again.

In serving puddings, we have experimented with various flavorings and fruits used in them until we have learned which are the most acceptable (cherries, pineapple, and vanilla, when not too sweet, are best liked).

We have added a greater variety of green and yellow vegetables, chopped raw or cooked, to our menus. At first, only small portions were served, but subsequently more was offered and eaten each time.

When a new menu item or a variation of a familiar one is served, an announcement is made over the microphone in the main dining room (where about two-thirds of the resident population eats). Its ingredients and/or its similarity to another food are explained. For instance, an explanation was needed when cream of potato soup was first served. The residents recognized the soup to be a little like potato chowder—a favorite for most—yet it wasn't the kind of potato soup they knew. Another time, carrots were refused by some. We explained their nutritive value and their relationship to the better functioning of the eyes. Some picked up their forks

WHICH COIN GOES OUT WHEN A MEAL COMES IN?

If your food service costs are more than a *nickel* per patient, per meal, *Lily* Paper Service* can be of vital importance to you!

A recent, nation-wide survey of hospitals presently using paper service for patient and staff feeding disclosed average costs of only 5¢ per meal, per patient! Some reported costs as low as 3¢ per meal. In addition to low cost, paper service is unmatched for assuring utmost sanitation . . . keeping noise at a minimum . . . speeding service . . . and reducing kitchen labor (ends scraping, sorting, dishwashing, sterilizing and bussing). Above all, patients accept and like paper service wherever it is used.

Lily Paper Service for hospitals includes sturdy, attractive cups, containers, dishes, plates and tray mats for serving all types of foods and beverages. Exclusive green leaf design makes food trays colorful, cheerful. Why not see for yourself? Send the coupon for free "Hospital Kit" of samples. *T.M. Reg. U.S. Pat. Off.

Lily® cups

LILY-TULIP CUP CORPORATION

122 East 42nd Street, New York 17, N. Y.

Chicago • Kansas City • Los Angeles • San Francisco
Seattle • Toronto, Canada

Lily-Tulip Cup Corporation, Dept. ADA-4
122 East 42nd St., New York 17, N. Y.

We would like to examine your free "Hospital Food Service" kit.

Name .....

Name of Hospital .....

Address .....

City ..... Zone .... State .....

and resumed eating them with, "I didn't know that." Thus the nutritional gaps are gradually being filled.

THE KITCHEN EMPLOYEES

Before the employment of a dietitian, the kitchen personnel had little or no supervision. Our cooks had been in the employ of the Home for many years, during which they had developed their own methods of food preparation—workable, though unscientific—in a kitchen built and equipped fifty years ago to serve fifty residents. A newly built and modernly equipped kitchen was opened a few years ago in the new wing of the building. On moving day, one of the cooks offered a prayer for the health of the residents and for their own health and safety in the use of the new and totally unfamiliar equipment.

Confidence of the cooks in the dietitian as a supervisor, teacher, and friend was established only slowly. The beginning of learning new ways of doing old jobs, experimenting with the newer methods of food preparation and preservation were begun early. When their method of preparing coleslaw (salting, standing for an hour, squeezing out the liquid formed, adding dressing and seasonings) was observed, I suggested a "new" way. The cooks readily agreed that a much more attractive, much more easily made product resulted, and they were happy to have learned how to do it.

They had no written recipes, and each cook had her inimitable way of preparing each dish. It was known by how the dish "went over" which cook had prepared it. In due time, the recipes they carried in their heads were put down on paper, enlarged to the size necessary to serve the greatly increased number of residents and employees, and standardized. These formed the basis for our standardized recipe file—without which the cooks now could not function.

Always with the fear of running out of food (since they had no portioned recipes), the cooks prepared food in too-large quantities. They felt that serving left-over foods in any form was disgraceful and that their prestige as good cooks might be jeopardized if they did so. Thus, leftovers were discarded. With constant teaching and guidance in modern food-serving practices, however, they are now always alert to prevent waste. There is a high degree of cooperation between the cooks and the dietitian, a willingness to add to their knowledge and experiment with new recipes, and a pride of accomplishment.

The existence of a food budget, as such, was unknown to the cooks previously. Today, they are aware of the importance of improving the food service, at the same time controlling food costs. This constant control of food production has resulted in a more generous diet of increased nutritive value at no greater food costs—and the residents show it in their much improved state of nutrition.

The dietitian in a home for aged has a complex role. She has the responsibility of the administrative, therapeutic, and educational functions of the dietary department. She is also a psychologist, a mother-figure to the residents, and a friend who provides the food.

REFERENCE

(1) WALKER, V.: Food service in homes for the aged. 1. Evaluation of food services. J. Am. Dietet. A. 27: 467, 1951.

✣ ✣ ✣ ✣ ✣ ✣ ✣ ✣ ✣ ✣

Developing Training Programs for the Food Service Supervisor[1]

ISOLA D. ROBINSON[2,3]

Chairman, Committee to Study the Auxiliary Worker (Food Service Supervisor)—1953–54
The American Dietetic Association
Chicago, Illinois

Delegation of supervisory responsibility has become almost a by-word in the field of dietetics. Particularly, hospital administrators are realizing that better administrative results accrue when professionally qualified dietitians are allowed to spend their time in policy-making or work with patients. This realization, coupled with the shortage of professionally qualified dietitians, has brought about a cooperative program, sponsored jointly by the American Hospital Association and The American Dietetic Association, to encourage the use of sub-professional supervisory personnel in the dietary departments of hospitals.

With proper training and experience, hospitals are learning—as have industry and business—that supervisory responsibilities in the dietary department can be safely and economically delegated. Training and actual work performance requirements must, of course, be closely related.

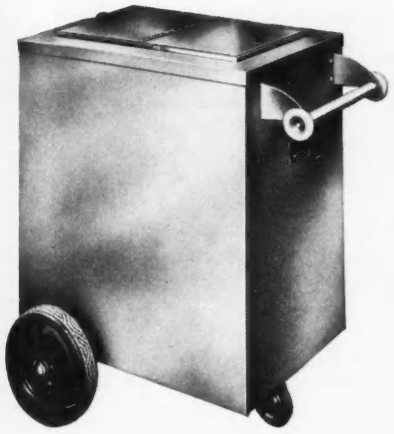
This need is not just a post-war development. As early as 1943, The American Dietetic Association recognized it, and committees have regularly been appointed to study the problem and make recommendations. They have reported to the membership and to the House of Delegates at annual conventions and through the professional journals.

Over the years, a number of in-service training

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 28, 1954.

[2] Dietetics Specialist, American Hospital Association, Chicago.

[3] The Chairman wishes to thank the members of the Committee for the help given in bringing this work to fruition: Lottie Crecelius, Cora Kusner, Beulah Hunzicker, Jean Riggs, Albert M. Macfarlane, and Louise Mojonnier.



SEMI-ENCLOSED TRUCK
MODEL TC 100
31½" x 23" x 51½" high
Designed primarily for use with bulk food conveyors to transport trays of complete meals from the diet-kitchen to the patient. Six meal capacity — even the last tray served will still be hot and appetizing. Tray guides have 7" spacing and will take 15¼" x 20½" trays. This truck may also be used to transport linen, cases of milk, soft drinks and other supplies. The truck is made of 302 stainless steel and is fully protected by IDEAL exclusive bumper. Requires a minimum of storage space.

ICE TRUCK
MODEL IT 150
36½" x 30½" x 40¼" high
This fully insulated ice truck is fabricated of 302 stainless steel throughout, and has a capacity of 150 pounds. Equipped with full size pneumatic wheels which provide ease of movement, and sturdy push handle with doughnut rubber bumpers for cart protection. The center hinged insulated cover provides easy access to ice.

UTILITY TABLE
MODEL MT 100
20" x 16" x 32" high
Solid stainless steel utility table with guard rail welded to body, and smooth running 3" casters. The full size drawer — 14½" x 13¼" x 3½" deep — operates on stainless steel slides equipped with ball bearings and drawer stops. An IDEAL table for use by anesthetist and as an all-purpose utility cart.

G-P TABLE
MODEL DT 100
33" x 18" x 29½" high with glides
The IDEAL general purpose table for instrument and dressing use, with general applications as a formula room table, tray delivery table, or linen carrier. Made of solid stainless steel throughout with ⅜" guard rail. Available with glides as shown above, or with smooth running 3" casters. 32½" high, with casters.

NEW IDEAL
time savers
for today's modern hospital

The Swartzbaugh Manufacturing Company, known for many years as the foremost producer of mobile food service equipment for the nation's hospitals, is now proud to announce a new line of IDEAL stainless steel products. Into these new products goes the same engineering know-how and the same high quality that have made the name "IDEAL" famous in hospitals the world over.

Write for full information

Ideal®
HOSPITAL EQUIPMENT
Found in Foremost Hospitals

Made only by the
SWARTZBAUGH
MANUFACTURING
COMPANY
MURFREESBORO, TENN.

programs have been developed by individual hospitals. During World War II, considerable effort was concentrated on the so-called "dietary aide" programs in some hospitals, while in others dietary technicians were trained. These workers performed a useful service.

More recently, a study of the use of the non-professional worker in a supervisory capacity was part of a "Workshop by Mail" which the Food Administration Section of The American Dietetic Association conducted in 1951–52 and which has been made available as a mimeographed report (1).

The following year, the President assigned a committee to study the supervisory worker who is in an auxiliary position to the dietitian. This committee was asked to define the background desirable, the job title, the functions to be performed by such an assistant. It was also requested to examine existing problems and to make recommendations as to what the training should include and where it could best be given. This committee reported at the Annual Meeting in Los Angeles in 1953.

The convention program at that meeting also included a session devoted to discussion of the auxiliary worker at which reports were given of four courses of training then under way: one in Cleveland under the guidance of the Cleveland Hospital Council, the others in Denver, Georgia, and Minneapolis. These programs have also been described in this JOURNAL (2). At the Los Angeles meeting, also, a preliminary curriculum outline for class instruction in a vocational school was presented.

The 1953–54 committee was appointed to continue this work. After studying the needs and reviewing the courses then offered, there was unanimous opinion that although an excellent start had been made, the preliminary outline presented in Los Angeles was not completely adequate and that further distribution should be halted until it could be evaluated and reviewed in terms of practicality to assure developing the kinds of individuals desired.

It was decided, further, that the best way to expedite the revision of the outline was to turn to those who were currently involved in training programs. Copies of the preliminary outline were then sent to these leaders in various areas, asking for comments, criticisms, and suggestions, as well as copies of outlines currently in use which might be used for comparative purposes. The quick response to this request brought suggestions of importance. Especially helpful, of course, were those from persons where courses had been under way the longest. At least one had been established for more than two years.

Believing that expediency was of the first order, the committee then proceeded with the editing, clarifying, and revising of the preliminary outline. With this work progressing, the committee recommended to the Executive Board of The American Dietitian Association in February that the title for the supervisory person be "food service supervisor." Although this title was not considered altogether satisfactory, it was agreed that it was probably the most suitable and the recommendation was accepted.

At the same Board meeting, the Committee recommended that the program as developed thus far be presented to the Joint Committee of the American Hospital Association and The American Dietetic Association, which was to meet soon. The Joint Committee expressed much interest in the outline and plans and voted that the parent organizations should encourage the development nationally of adult education programs for the food service supervisor, following the basic curriculum approved by the A.D.A.

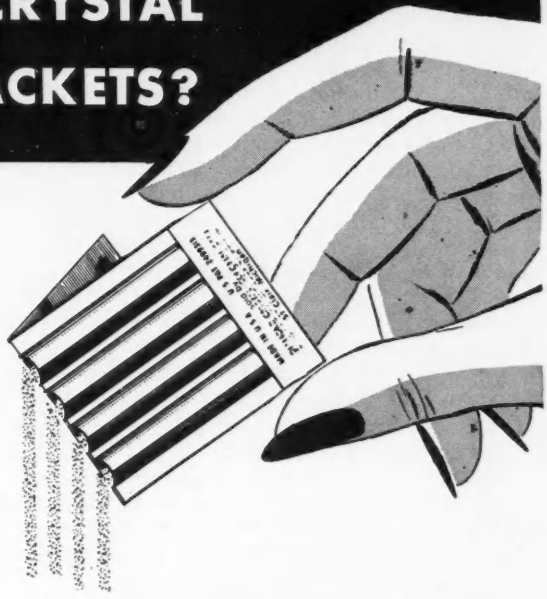
The A.D.A. Committee's revision of the preliminary outline was finally completed in April 1954, when the *Tentative Trial Outline for Class Room Instruction—The Training of the Food Service Supervisor (Vocational School Level)* was issued in mimeographed form (3). As the work progressed, it was reassuring to the Committee to know that many, the country over, were interested and concerned about the course content to be recommended for such training and that a number of state dietetic associations were actively planning educational courses in their respective areas, all of whom were anxious for guidance along these lines.

While developing the outline, the committee decided that it was important, also, to define the duties to be delegated to the food service supervisor, and furthermore, that it was of immediate concern to define the duties to be delegated to the dietary clerical worker so that the job classifications would not become confused. The thinking of several project committees of the Association was called upon to help in stating the job descriptions for four grades of professionally qualified dietitians—director of the department, administrative assistant dietitian, therapeutic dietitian, and educational assistant dietitian—as well as those of the food service supervisor and the dietary clerical worker. These definitions, or job descriptions, were published in the JOURNAL (4).

The Committee, however, still did not feel that its work was complete. If the outline for class instruction was to be used effectively on a nation-wide basis, the need for a companion outline for supervised practice in the hospital seemed apparent. With the approval of the entire committee, a small *ad hoc* committee met late in May for two days of concentrated work to expedite the development of this second outline. Uppermost in the minds of this committee was the fact that, to make supervised practice effective, each assignment should be planned to give the trainee an opportunity for observation and for developing ability, under careful guidance, to supervise routine procedures and direct the work of others. Basing the outline on one which was currently

Have You Sent

FOR YOUR **FREE** TRIAL CARTON OF 100 DIAMOND CRYSTAL SALT and PEPPER PACKETS?



Fill in the coupon below and send for your sample right away!

See for yourself how Diamond Crystal Salt and Pepper Packets can streamline your seasoning service . . . and help make your mealtime operation more efficient!

DIETITIANS SAY THAT PACKETS:

- Prevent cross-infection because they are used by only one person and then thrown away!
- Save time and labor! Eliminate washing, filling and constant handling!
- Speed up service and simplify tray preparation!
- Eliminate breakage and pilferage!
- Offer users fresh, crisp, sanitary, individualized service!

Packets contain New Weather-pruf Salt which stays free-flowing even in wet or humid weather!

Each Packet contains enough salt and pepper for a complete meal!

Used by leading hospitals, institutions, restaurants and cafeterias from coast to coast!

Wherever food is served, there's a place for Packets!

SEND FOR YOUR FREE TRIAL CARTON TODAY!

Diamond Crystal Salt Co.
Dept. D, St. Clair, Michigan

Please send me my free trial carton of 100 Diamond Crystal Salt and Pepper Packets.

Name_____ Position_____

Organization_____

Street_____

City_____ Zone_____ State_____

in use in an established course and incorporating those ideas thought to be practical on the national level, an initial outline was prepared and submitted to the full committee. After review and critical evaluation, this effort resulted in the issuance in September 1954 of a second revision, titled *Part II—Supervised Practice. First Tentative Trial Outline of Hospital Experience—The Food Service Supervisor* (5).

These outlines in their reviewed and revised forms are now available for use as a basic plan for courses to be given at the vocational school level, followed by practical experience in the hospital. It is expected that adaptations to meet local needs will be incorporated as the outlines are put in use. However, it is hoped that they can serve as the backbone of training programs which may have some uniformity on a nation-wide basis.

PILOT STUDIES

Currently, in at least two locations, plans for pilot-study courses based on these outlines are being developed. If plans work out as indicated for one such course in Michigan, an educational director will be appointed to coordinate the various phases of the course and to follow closely the field experience of the students. This course, which is being organized at the Kellogg Center for Continuing Education, Michigan State College, will be under the close guidance of the Michigan Dietetic and Hospital Associations. Present thinking is that the course would best be established on a pilot-study basis for a five-year period and that it be tailored to fit the needs of the small hospitals in the state.

With recommendations completed as to job title, job description, qualification of applicants, type of instruction, and course outlines for classroom instruction and supervised field experience, the 1953–54 Committee felt that it was in order to say, "Mission accomplished." In the same breath, however, it recognized that after pilot studies have been conducted, revisions may be possible and necessary. There was agreement, too, that the Committee's report to the Executive Board should recommend a future committee to undertake the preparation of a manual for the food service supervisor. Other suggestions for future committee activity include: follow-through on development of courses in various sections of the country as actually organized and conducted; encouragement and implementation of pilot courses; and promotion of recruitment through the publication of articles pointing up the value of such courses.

The problem of educating and training the food service supervisor is a local one; however, in its broader aspects, it is recognized that recruitment and training are also responsibilities of the dietetic profession as a whole. Progress along this line can only come through the cooperation of both the dietetic and hospital associations. It is gratifying that important groups in various states are proceeding on this basis. The advantages to hospitals in providing better dietary care to the patient through the education and training of food service supervisors should not be underestimated. With training facilities possible, the next logical step in expanding the dietitian's area of effective service is to promote the new occupation of "food service supervisor."

REFERENCES

(1) ODLE, D.: Project #1, "A Workshop by Mail." Chicago: Am. Dietetic Assn., 1952.
(2) WOOD, M. J., PERRY, E., POLEY, L. C., AND THOMAS, G. I.: Training auxiliary workers. J. Am. Dietet. A. 29: 688, 1953.
(3) COMMITTEE TO STUDY THE AUXILIARY WORKER: Tentative Trial Outline of Class Room Instruction—The Training of the Food Service Supervisor (Vocational School Level). Chicago: Am. Dietetic Assn., 1954.
(4) Duties and responsibilities. J. Am. Dietet. A. 30: 692, 1954.
(5) COMMITTEE TO STUDY THE AUXILIARY WORKER: First Tentative Trial Outline of Hospital Experience—The Food Service Supervisor. Part II. Supervised Practice. 2nd rev. Chicago: Am. Dietetic Assn., 1954.

✠ ✠ ✠ ✠ ✠ ✠ ✠ ✠ ✠ ✠

Checking Menus Is Not the Answer[1]

MARJORIE M. HESELTINE
Chief, Nutrition Section
Children's Bureau
Department of Health, Education, and Welfare
Washington, D. C.

Nutritionists of the Children's Bureau have been spectators as state agencies have striven to bring about an improvement in the diets of mothers and children in hospitals, convalescent homes, and other institutions. But, although we have been on the sidelines, we have been in the cheering section. We cheered when the Maryland Dietetic Association as a community service in wartime offered free consultation to children's institutions without dietitians. When that association terminated its highly impressive demonstration of the value of such a service, we encouraged the nutrition consultant in the Maryland Department of Health as she persuaded her administrator to create the position of consultant dietitian to give full time to institutions. We have kept on cheering as other state health agencies have followed the example set by Maryland until at present, seventeen employ at least one worker who gives major attention to institutions. Because we have official relationships with state health agencies, we feel a special kinship with them. But, we save some breath to cheer the other agencies

[1] Presented at the 37th Annual Meeting of The American Dietetic Association in Philadelphia, on October 28, 1954.

SOLVES **400** BREAKAGE PROBLEMS

LINCOLN PARK RETREAT of Los Angeles eliminates excess breakage problems by serving their 400 patients exclusively with TRIPLE-DUTY DALLAS WARE.

When you stop to think about it, every meal you serve is actually a breakage problem. And Lincoln Park Retreat had 400 "breakage problems" to serve three times a day. Maybe that's why they wrote us:

"... TRIPLE-DUTY DALLAS WARE *has met our every test . . . we sincerely recommend it to others with excess breakage problems . . .*"

Nice of them, wasn't it? We think this is what they wanted you to know: TRIPLE-DUTY DALLAS WARE is the strongest molded dinnerware made. We alone own the exclusive process which makes it the strongest, and it's that unusual strength that practically eliminates your replacement problems. And saves you money.

The same exclusive process gives TRIPLE-DUTY DALLAS WARE an unusually hard surface, one that resists scratches, breaking, and stains . . . that dries without spotting, can be mechanically washed, and isn't harmed by boiling water!

All of these advantages for you . . . and you're still serving your meals on beautiful dinnerware in pleasant new texture-colors. There's no crashing of crockery, yet light TRIPLE-DUTY DALLAS WARE lets your personnel handle more dishes safely.

Worth looking into, isn't it? Just mail the coupon at the right . . . we'll take care of everything else.

Dallas Ware
DIVISION

Plastics Mfg. Co., 825 Trunk Avenue, Dallas 10, Texas

TRIPLE-DUTY DALLAS WARE

An unbelievable new dinnerware . . . harder, stronger, more resistant to breaking, marring, staining. *Dries without spotting!* In beautiful new texture-colors: Green on White, 10-GW; Blue on White, 15-BW; Tan on White, 20-TW, Sandalwood Brown on White, 5-SW.

HEAVY-DUTY DALLAS WARE

Popular commercial dinnerware . . . highly resistant to scratches, breaking, cracking. Six molded-in colors that can't wear off: Pastel Blue, Sea Green, Desert Tan, Jonquil Yellow, Bermuda Coral, Bone White.

TEXAS WARE

Same material as Heavy-Duty Dallas Ware, but with thinner walls. Six popular colors: Pastel Blue, Sea Green, Desert Tan, Jonquil Yellow, Bermuda Coral, Bone White.

Send for FREE folder TODAY!

Dallas Ware Division, Dept. JA-4
825 Trunk Avenue
Dallas 10, Texas

Please send me the money-saving story on Dallas Ware.

*Name*_____
*Firm*_____
*Address*_____
*City*_____ *Zone*____ *State*_____

that are also accepting responsibility for improving the diets of individuals in group care because we are well aware that they, too, are protecting the health of mothers and children.

We remember that the idea of dietary consultation as a responsibility of an agency of state government did not originate in a department of public health. The first state agency to establish such a program, I believe, was the Pennsylvania Department of Welfare, back in the early thirties. The late Florence Peters was a valiant and effective pioneer to whom it is fitting to pay tribute. It was gratifying recently in totaling the number of agencies that we know to be employing dietary consultants to find that there are forty-four agencies distributed over twenty-eight states. Two of these, be it noted, are voluntary —one is a welfare federation and the other a privately financed service to a group of small hospitals.

As the nutritionists from the Children's Bureau visit the states, we are told some of the obstacles that health agencies encounter in extending consultation service to institutions. These problems seem to be much the same whether the state agency is working with an institution on a purely invitational basis or whether it has legal authority for licensing. In the first place, the sections relating to the adequacy of the diet in standards for licensing are likely to be so general that it is difficult indeed to ascertain in the course of an ordinary inspection whether standards are being met.

PROBLEM OF GAINING COOPERATION

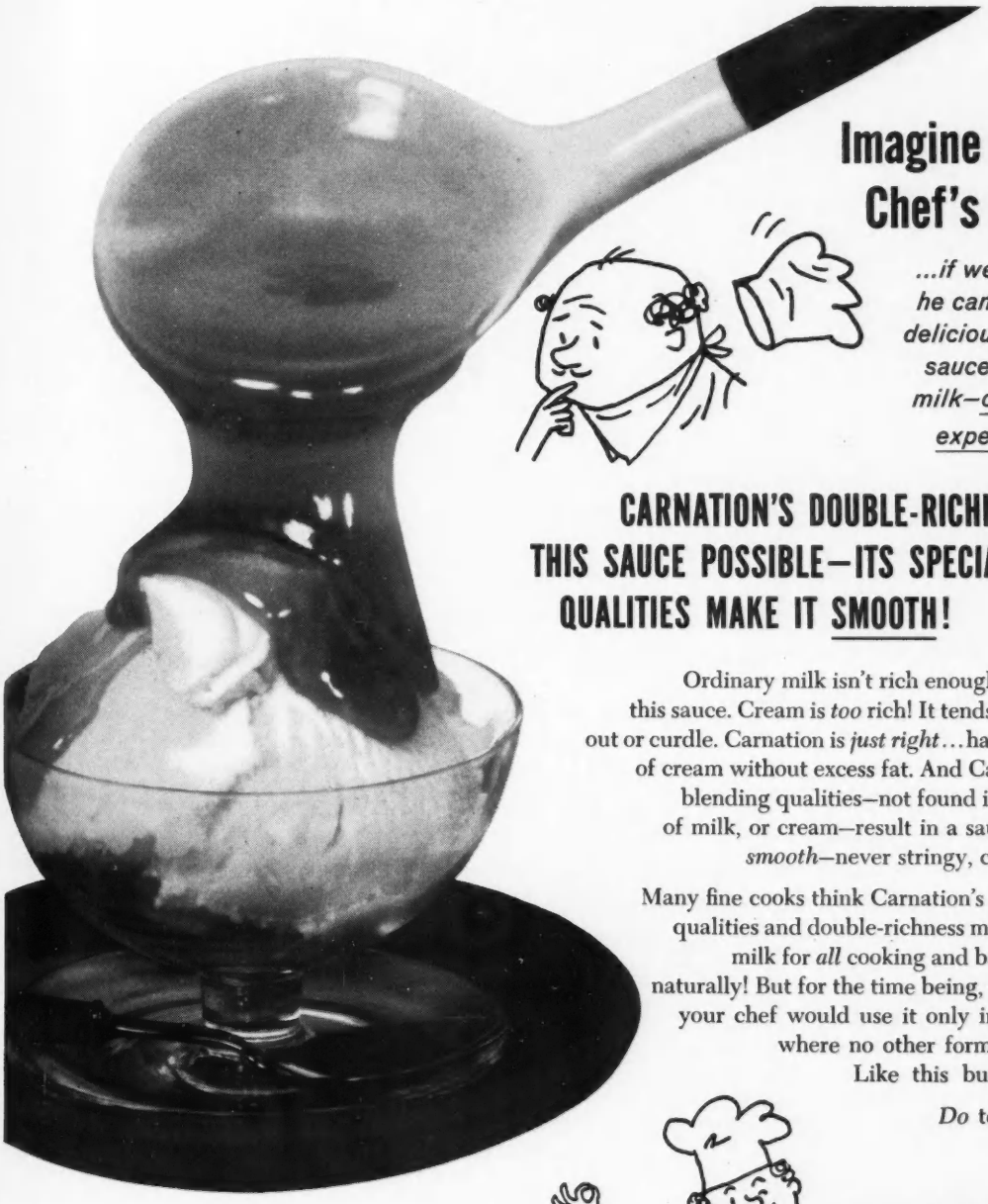
I am not prepared to assign 1-2-3 priorities to the problems that dietary consultants in state health agencies mention to us. However, well up in the forefront is the problem of getting the institution that can profit most from such consultation to request it and to make available to the consultant the information necessary both to make an accurate appraisal of the state of affairs and sound recommendations for improvements. To be sure, capable and conscientious administrators, such as those who cooperated so wholeheartedly with Alice H. Smith in the pilot study in Michigan which is reported in this issue of the JOURNAL (1) are usually eager for help and ready to supply all relevant information. Such administrators richly deserve the reassurance that can come from a carefully conducted evaluation of their food service. It is only when they take up the time of the consultant to the exclusion of institutions sadly in need of improvement that there is cause for concern. After all, institutions not doing such a good job are the ones that must be reached and helped if situations are to improve.

Unfortunately, the same factors that result in poor service often stand in the way of easy and productive consultation. One reason meals are monotonous is that no one has taken the trouble to plan them in advance and to keep accurate records of what was served when. Thus, the consultant must spend much time getting that essential information. The evening meal in a children's institution may be skimpy because the person in charge is more concerned with making things easy for the employees—who can leave—than with providing adequate nourishment to the children—who can't leave. A survey may be requested by an administering agency because there is outspoken dissatisfaction on the part of the residents. In such a situation, the consultant is confronted by a defensive director and staff who are reluctant to give any information. And so it goes!

VALUE OF MENU CHECKING

The prospect that consultation to institutions will be productive is greatly enhanced if the recipients know what to expect and above all what their responsibilities will be. I chose as the title for this paper, "Checking Menus Is Not the Answer" because repeatedly I have heard an agency administrator say, "We know that the food service in X Home is perfectly satisfactory because we send our menus in to Miss Y at the Capitol for checking." Without doubt, Miss Y would be the first to admit that checking menus has only limited value. She may have paid an impromptu visit to that institution and found that any resemblance between the written menu and the food actually served to the residents is little more than coincidental. Even if there were close agreement, the size of the portions may vary so widely from accepted standard portions that a rough evaluation of adequacy, based on the assumption that portions were of standard size, would be grossly inaccurate.

Menu checking, of course, has its place in dietary consultation. Every consultant has tried to work with an institution that had no record of foods served or did no advance menu planning. A small town hospital which a regional consultant of the Children's Bureau visited when she worked in a state health agency would not know what was to be served for the noon meal on Monday until someone unlocked the storeroom that morning to learn what was available. Persuading a responsible individual to plan even a few days in advance and to record both what was planned and what was actually served may be a big first step in the improvement of food service. And that step may be taken because a sympathetic dietary consultant will review those menus and give constructive suggestions. Menus *do* answer one question, namely: Has the person responsible for planning them knowledge of the food combinations that are suitable for the individuals served and the imagination to plan meals that sound appetizing? Checking menus certainly has its place in dietary consultation, but as a milestone and not as a destination.



Imagine Your Chef's Surprise!

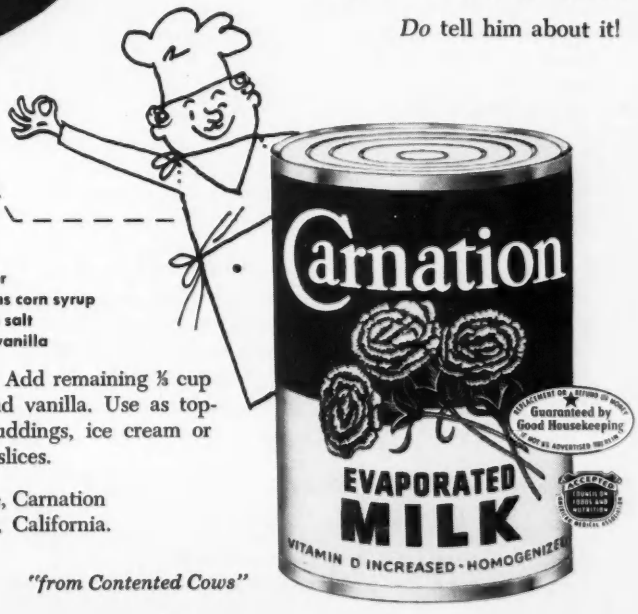
...if we were to say he can't make this delicious butterscotch sauce with ordinary milk—or even with expensive cream!

CARNATION'S DOUBLE-RICHNESS MAKES THIS SAUCE POSSIBLE—ITS SPECIAL BLENDING QUALITIES MAKE IT SMOOTH!

Ordinary milk isn't rich enough to give body to this sauce. Cream is *too* rich! It tends to scorch, water out or curdle. Carnation is *just right*...has the consistency of cream without excess fat. And Carnation's special blending qualities—not found in any other form of milk, or cream—result in a sauce that's *always smooth*—never stringy, curdled or grainy.

Many fine cooks think Carnation's special blending qualities and double-richness make it the perfect milk for *all* cooking and baking. We agree, naturally! But for the time being, we'd be happy if your chef would use it only in special recipes where no other form of milk will do. Like this butterscotch sauce.

Do tell him about it!



BUTTERSCOTCH SAUCE

(Makes 1½ cups sauce)

1 cup brown sugar
½ cup granulated sugar
1 cup *undiluted* CARNATION EVAPORATED MILK
¼ cup butter
2 tablespoons corn syrup
¼ teaspoon salt
1 teaspoon vanilla

Place sugar, ⅔ *cup* Carnation, butter, corn syrup and salt in saucepan over medium heat. Cook 3 minutes, stirring constantly. Remove from heat, cool slightly. Add remaining ⅓ cup Carnation and vanilla. Use as topping over puddings, ice cream or toasted cake slices.

FOR QUANTITY RECIPES, write to Mary Blake, Carnation Company, Dept. C-45, Los Angeles 36, California.

"from Contented Cows"

It is easy to point out the shortcomings of menu checking as a means of dietary evaluation or of continuing consultation; it is *not* easy to outline in detail what would work better. All I will attempt is to point out some of the *kinds* of things that would seem to be helpful. First, I should like to see a statement explaining dietary consultation. In my opinion, the dietary consultant could make good use of a simple and clear-cut statement from an authoritative source as to what is involved in appraising the adequacy of the food service in an institution. She should not have to ask the agency or administrator requesting a survey to take her unsupported word that adequate quantitative data must be supplied, that time must be allowed for first hand observation, and that an opportunity must be given to present findings to those who can act on them. She should be able to show recommendations to that effect from a source recognized as both qualified and disinterested. I am not prepared to say who should formulate such a set of recommendations, but I am convinced that The American Dietetic Association should have a share in the drafting.

NEED FOR TOOLS

Another kind of help for dietary consultants is guide material covering the procedures for a food service appraisal and including suitable forms for recording data and making recommendations. The handbook on *Planning Food for Institutions* issued in 1951 by the then Bureau of Human Nutrition and Home Economics (2) has been a useful tool in working with the better-organized institutions.

Dietary consultants have supplemented it with a wide variety of materials developed to meet special needs. I think, for example, of two adjacent states, one very populous and the other sparsely settled. In the first, a staff of nutritionists in the state health agency have been surveying the dietary departments of local tuberculosis sanitoria which receive state subsidies. The forms that this group worked out for use in this survey take up thirteen pages, and, the nutritionist making the survey spends four days in each sanatorium. In case this sounds rather formidable, I can report that the approach to the institutions had been made so carefully that the surveyors have met with a minimum of resistance. In fact, in more than one instance, local officials have requested that a similar survey be undertaken in some other county health facility.

In the neighboring state, the one nutritionist employed by the health agency worked with a social worker in the Department of Welfare to develop a check list that could be used by various professional persons visiting children's institutions licensed by the state. I hardly need to mention that this check list does not fill thirteen pages! On the contrary, it is concise enough so that the director of one children's home expressed interest in using it himself to see how his institution rated.

The nutritionist and social worker in the second state did not set out to devise a tool for continuous evaluation by administrators, but isn't this still another unmet need? Who is going to make periodic visits to the 7000 nursing homes (whose average capacity is estimated at 25 beds) or to the 1000 hospitals with fewer than 25 beds—to name only some of the health facilities too small to employ a trained dietitian even if there were dietitians to staff them? If the food service in these institutions is to make a maximum contribution to the health and happiness of the patients and at the same time is to be operated on an efficient basis, the person in charge should not have to wait for the next visit of an "expert" to learn whether she is doing a good job. She needs a yardstick simple enough that she is willing to use it and flexible enough that it can be applied to Eskimo children in an orphanage in a remote Alaskan village as well as to a group of unmarried mothers in a big city maternity home.

I have no illusions that such a device for continuous dietary evaluation would be simple to evolve. For that matter, much time and thought would have to go into developing any of the other materials I have mentioned, i.e., the statements as to what is involved, the handbook of procedures, and the forms. But dietary consultants working alone are already spending an impressive number of woman-hours on these very jobs—not to mention the time given to that unproductive job of menu checking.

Needs vary and materials must be adapted. But needs are not related to political subdivisions as such. A small nursing home in Missouri may have more in common with a similar institution in Wyoming than either has with a school for the mentally retarded in the next town. None of us is so far from our elementary mathematics as to forget how much more A and B accomplished when they worked together than either could accomplish alone. I wish that The American Dietetic Association could find a way by which the already impressive efforts of the small but mighty band of dietary consultants could be so coordinated as to make the combined efforts of our friends A and B seem puny by comparison.

REFERENCES

(1) Smith, A. H.: Consultation service in a home for the aged. Am. Dietet. A. 31: 363, 1955.

(2) Lifquist, R. C., and Tate, E. B.: Planning Food for Institutions. U.S.D.A. Agriculture Handbook No. 16, January, 1951.

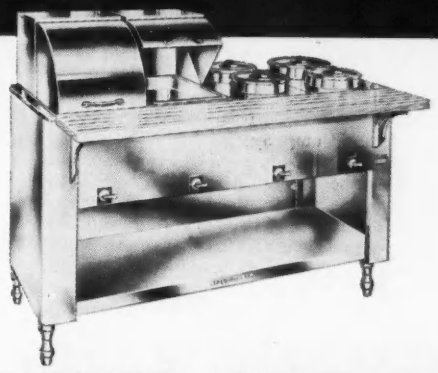
Plan now to attend the 38th Annual Meeting of The American Dietetic Association, October 18–21, 1955, in St. Louis.

Drop in and see us, Combined AGA Exhibit, National Restaurant Show, Chicago, May 9–13.

First on the list of places to wine and dine in Quincy, Ill., is *The Steak Pit*, one of five popular rooms in Stipp's Restaurant.

The feeling of mysterious spaciousness is the result of charcoal color walls and ceiling, pierced by pinhole lighting in movable ceiling panels.

Patrons select their own steaks from a tempting, carefully aged selection in a special refrigerated display case and watch them cooked to their own taste over open charcoal broilers.



we know by experience

THURMADUKE KEEPS FOOD BETTER

"No other food warmer has given us the service we are getting from our Thurmaduke Waterless jobs", says Mrs. Edna Stipp.

"We particularly like the Selective Heat Control because it lets us keep each food at the right temperature; that means we hold the flavor better and there's less drying out and shrinkage. We find it costs quite a bit less to operate, too. All in all, we are only sorry we didn't make the change to Thurmaduke, sooner."

"We put in our first Thurmaduke over 8 years ago and we've yet to spend our first dollar on it in maintenance or repairs."

Whether your operation is large or small, cafeteria or table service, there is a Thurmaduke Waterless Food Warmer or Standard Unit Cafeteria Counter in a size or combination of units to fit your plans and improve your food service.

Clip and Mail Today

DUKE MANUFACTURING CO. Dept. D 4
2305 NO. BROADWAY, ST. LOUIS 6, MO.

Please send complete information on
☐ Cafeteria Counters ☐ Waterless Food Warmers

NAME_____

ADDRESS_____

CITY AND ZONE_____ STATE_____

THURMADUKE

DEPENDABLE FOOD SERVICE EQUIPMENT

THURMADUKE WATERLESS FOOD WARMERS • STANDARD UNIT COUNTERS AND OTHER EQUIPMENT

Book Reviews

Let's Eat Right to Keep Fit. By Adelle Davis. New York: Harcourt, Brace and Company, 1954. Cloth. Pp. 322. Price $3.

The author apparently believes that the science of nutrition is palatable to the reader only if it is excessively garnished with extravagent claims and questionable, undocumented facts. Granted that readability is desirable and that some scientific texts are certainly dull. However, this book is not a satisfactory compromise.

It seems unfortunate that material of this sort will reach those who do not have a background of knowledge sufficient to read and evaluate with discrimination. Let us hope that this book is seldom used as a text or reference by medical students or practicing physicians, even though this is suggested in the Foreword.—*Elizabeth K. Caso, Nutritionist, Diabetes Field Research and Training Unit, Public Health Service, Department of Health, Education, and Welfare, Boston.*

Diet to Suit Yourself. By Walter Ross. New York: The McBride Company, 1954. Cloth. Pp. 160. Price $3.50. Signet Key Pocket-Size Edition. New York: The New American Library of World Literature, Inc., 1954. Paper. Pp. 160. Price 25 cents.

Walter Ross has packed a tremendous amount of information about dieting in his 160 pages of *Diet to Suit Yourself*. His material is based on the scientific experiments conducted by the Medical Department of the American Telephone and Telegraph Company.

He tells of the serious consequences of overweight and repeatedly emphasizes the dangers of fad diets by showing their deficiencies and poor results. He particularly stresses the uselessness of reducing pills. He is aware of and cites many problems individuals have with eating more than they physically need and discusses their feelings about losing weight. He stresses the need of psychologic help, which one may often obtain in group situations or with a therapist.

The author outlines the excellent method of Manson of Bell Telephone for use in planning lower caloric diets which add no extra cost or inconvenience to the workers or their families, while providing both essential nutrients and restricted calories. The plan encourages the eating of protective foods and emphasizes the use of not less than 1200 to 1300 calories per day, and a loss of not more than 1 to 2 lb. per week.

The Section, "What Everyone Must Eat," would have been more consistent with the attitudes presented throughout the rest of the book if greater flexibility and choice had been made possible in the outline of the diet. More information might have been given on foods of equivalent nutritional value, such as those now included in the diabetic exchange plan. With such lists, people could more nearly eat to "suit themselves" while using the foods they need to keep their bodies in good nutritional condition during a reducing regimen. The author lists some four hundred foods and their calories in alphabetical order. An exchange system which considers both calories and other nutrients would have had greater value.

Chapters are also included on diets for: people who wish to gain weight; the aged and teen-agers; pregnant women; and persons requiring modified diets. Other topics covered in this book include food in relation to dental health; storing, preparing, and cooking food to protect its nutritional value; and a chart of calories used in some activities.

In this reviewer's opinion, this is one of the most informative books written to help people lose weight. It is written in an interesting and easy-to-read manner.—*Beverly R. Collier, Clinical Nutritionist, University of Chicago Clinics.*

James Beard's Fish Cookery. By James Beard. Boston: Little, Brown and Company, 1954. Cloth. Pp. 460. Price $4.95.

Whether or not you're a fish enthusiast, take note of *James Beard's Fish Cookery*. It covers the subject of salt water, fresh water, and shell fish in a convincing fashion.

Of special interest is the table of contents, its clarity, its readability, its 10-point type. Whatever fish you're interested in is listed there, and you may promptly refer to it without a prolonged hunt-and-find search. Also valuable is the getting-acquainted information about fish—buying, preparing, cleaning, dressing and cooking, with repeated cautions concerning overcooking.

Then come the enticing recipes, some of them are quite involved and complicated; others simple. Take your choice, but whatever it is, there is no excuse for desultory Friday menus with *James Beard's Fish Cookery* at hand.—*Ilma Lucas Dolan, Dietitian, California Foods Research Institute, San Francisco.*

Time to Entertain. By Charlotte Turgeon. Boston: Little, Brown and Company, 1954. Cloth. Pp. 236. Price $3.75.

This cook book was written to show the hostess how to remain with her guests from the very beginning to the end of the meal. The interesting recipes are the results of the author's visits to restaurants in France, Italy, and England, and a year's study at L'Academie de Cuisine de Paris, Le Cordon Bleu. Timing is the emphasis in preparation of these menus, and detailed plans are given with each menu as to what can be done before hand, what can be done 20, 10, or 5 min. before the guests arrive, and just before the meal is served. Shopping lists are presented in every instance, as are lists of appropriate wines, and variations are suggested with each menu. The types of meals included are dinners, dinner parties, pot-luck suppers, luncheons, breakfasts, various week-end gatherings, teas, cocktail parties, sportsmen's meals, and children's suppers. The book closes with a chapter on "Specialties and Supplies" in which there are recipes for various breads, salad dressings, sauces, and soups. Aside from the emphasis on time schedules, the outstanding feature of the book is the gourmet touch found in every menu.—*Margene A. Wagstaff, Warrenville, Illinois.*

RECENT BOOKS RECEIVED

Protein Metabolism. By R. B. Fisher, Ph.D. New York: John Wiley & Sons, Inc., 1954. Cloth. Pp. 198. Price $2.50.

Simplified Diabetic Management. Sixth edition. By J. T. Beardwood, Jr., M.D., F.A.C.P., and Herbert T. Kelly, M.D., F.A.C.P. Philadelphia: J. B. Lippincott Company, 1954. Cloth. Pp. 194. Price $3.

The Jewish Festival Cookbook. By Fannie Engle and Gertrude Blair. New York: David McKay Company, Inc., 1954. Cloth. Pp. 216. Price $3.50.

How to Eat Better for Less Money. By James A. Beard and Sam Aaron. New York: Appelton-Century-Crofts, Inc., 1954. Cloth. Pp. 317. Price $3.50.

Meat...

and the management of cirrhosis

A recent review and analysis of the advances made in the management of cirrhosis of the liver during the last fifteen years shows that effective treatment, especially before irreversible changes have occurred, today includes a diet providing 150 grams of protein daily.[1] This high protein diet, first reported in 1941,[2] represented a revolutionary change from previous thinking. It has played an important rôle in the prolongation of life for countless cirrhotic patients.[1]

In addition to other foods from animal sources, three servings of lean meat daily have been used to assure the protein adequacy of the therapeutic regimen.[3]

The maximum use of meat appears "to be advisable because of the necessity for providing the essential amino acids which contain the basic methyl groups, with and without the sulfur radical. These methyl groups are required for the transmethylation function which institutes regeneration and healing in cirrhosis."[3]

Furthermore, although this point remains controversial, clinical observations suggest either that lipotropic agents supplementary to those supplied by the high protein diet are superfluous[4] or that their beneficial action remains to be demonstrated beyond doubt.[5]

Cooked lean meat provides from 25 to 30 per cent of high quality and highly available protein. It contributes also valuable amounts of B vitamins, including choline and B_{12}, and of iron, phosphorus, and potassium. Its high content of choline and methionine constitutes an important source of labile methyl groups.

---

1. Morrison, L. M.: Treatment of Cirrhosis of the Liver—Recent Innovations, Am. J. Gastroenterol. *21*:27 (Jan.) 1954.
2. Patek, A. J., Jr., and Post, J.: Treatment of Cirrhosis of the Liver by Nutritious Diet and Supplements Rich in Vitamin B Complex, J. Clin. Invest. *20*:481 (Sept.) 1941.
3. Morrison, L. M.: New Methods of Therapy in Cirrhosis of the Liver, J.A.M.A. *134*:673 (June 21) 1947.
4. Nash, E. C.: Management of Portal Cirrhosis, J. Nat. M. A. *45*:395 (Nov.) 1953.
5. Portis, S. A., and Weinberg, S.: Recent Advances in the Medical Treatment of Cirrhosis of the Liver, J.A.M.A. *149*:1265 (Aug. 2) 1952.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

American Meat Institute
Main Office, Chicago . . . Members Throughout the United States

Current Literature

Contributed by Mildred Bonnell and administrative dietetic interns, University of Washington, Seattle; Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; Marjorie Cheney, Dietetic Intern, VA Center, Los Angeles; Elizabeth H. Tuft, Wesley Memorial Hospital, Chicago; and the Journal staff

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES

Vol. 229, January, 1955

*Allergy to foods containing sulfur-amino-acids, especially methionine: Case report and clinical study. L. Tuft, L. N. Ettelson, and H. Schwartz.—p. 26.

Procedure for the determination of sodium, potassium and chloride in biologic material. W. H. Hulet.—p. 81.

*The sodium, potassium and chloride content of the "200 mg. sodium diet." W. H. Hulet.—p. 85.

Allergy to Sulphur-Amino Acid Foods. Many instances of food allergy with positive clinical histories and negative skin reactions have been noted. It is possible that the reaction may be due to the split-products (amino acids, proteoses, peptones) rather than to the whole protein. In the case reviewed, the patient was clinically sensitive to skin-test-negative foods high in sulphur content, especially eggs. The ingestion of methionine, a sulphur-containing amino acid present in egg in large amount, produced the same symptoms as eggs. It was suggested that the reaction may be biochemical rather than immunologic. This abnormal reaction, however, does offer some explanation for this diagnostic problem of food allergy.

Analyzed vs. Calculated Sodium Values. Thirteen "200-mg. sodium diets" were analyzed to determine their actual sodium, potassium, and chloride content. Samples from the diets which had been made into filtrates by digestion in nitric acid were analyzed by flame photometry. The actual amount of sodium varied from 304 to 812 mg., with an average of 513 mg. Four samples of the Kempner rice and fruit diet, also analyzed for sodium content, contained an average of 169 mg. sodium, while the expected content, calculated from the tables by Bills *et al.*, was 26 mg. Since all of the diets analyzed contained considerably more sodium than was calculated according to the tables, this study has cast considerable doubt on the validity of the tables. It has also indicated the need for determining the sodium content of the hospital water supply in order to prepare valid low-sodium diets.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 45, January, 1955

*Sanitation aspects of "take-out" type foods. C. I. Senn and P. P. Logan.—p. 33.

Sanitation of "Take-Out" Foods. The rapid growth of the frozen take-out food business has created new problems in sanitation. The foods are handled many times by many persons and proper precautions are not always taken. The frozen food industry must recognize certain dangers. For example, in boned-chicken foods, various paratyphoid organisms, capable of producing intestinal and other complicating infections in man, have been isolated from eviscerated poultry. Paratyphoid and typhoid bacilli survive for long periods in frozen foods, as does the botulism organism and its toxin. Failure to assure rigid bacteriologic control in frozen foods will ultimately lead to difficulty. Certain standards of sanitation for this particular business should be established. No less important than plant and product sanitation is the inclusion of positive instructions in readable printed form on every package of take-home food. Public education is the answer to the problem of getting the customer to avoid prolonged holding or storage at temperatures favorable for the growth of organisms.

ARCHIVES OF INTERNAL MEDICINE

Vol. 95, January, 1955

*Clinical syndromes associated with hypernatremia. H. M. Schoolman, A. Dubin, and W. S. Hoffman.—p. 15.

*Clinical comparison of vitamin K_1 and water-soluble vitamin K. J. R. Gamble, E. W. Dennis, W. W. Coon, P. Hodgson, P. W. Willis, III, J. A. MaCris, and I. F. Duff.—p. 52.

Clinical Syndrome Associated with Hypernatremia. Over one hundred cases of acute hypernatremia occurring during a period of four years are reported. With few exceptions, these cases fall into three categories: primary desiccation, central nervous system injury, and diabetic coma after saline therapy. Hypernatremia may result if patients in diabetic coma are treated solely with insulin and saline solutions. The treatment of hypernatremia is the intravenous or oral administration of non-saline fluids. Such treatment is usually successful except in cases of injury to the central nervous system which are severe enough to result in death.

Comparison of Vitamin K_1 and Vitamin K. Oil-soluble vitamin K_1 is more effective than any other agent now available in combating drug-induced hypoprothrombinemia. In most cases small (1 to 5 mg.) oral doses produce a more satisfactory response than the large intravenous doses generally recommended. In hypoprothrombinemia due to absorptive difficulties, oil-soluble vitamin K_1 and water-soluble vitamin K appear to be equally effective.

BRITISH MEDICAL JOURNAL

No. 4898, November 20, 1954

*The treatment of severe hypertension. M. L. Rosenheim.—p. 1181.

No. 4899, November 27, 1954

Hypertension and its control by hexamethonium. K. S. Smith, P. B. S. Fowler, and V. Edmunds.—p. 1243.

Treatment of Severe Hypertension. The malignant phase of hypertension depends on the severity of the hypertensive vascular disease. It can occur in many different forms of hypertension, and lowering the blood pressure is a non-specific method of relieving it. The underlying mechanism of the benign phase remains unknown. There is much that can be done to help the patient with severe hypertension. The presence of the changes of the malignant phase, or of signs and symptoms heralding its approach, calls for urgent treatment. Evidence that the heart may no longer be able to bear the strain of severe hypertension must also be regarded as an indication for intervention. In the early and often asymptomatic stages of benign hypertension, however, drastic treatment is not only unwarranted but, since it makes the patient more conscious of his disease, is often accompanied by unpleasant side effects and may be dangerous.

FOOD SCIENCE ABSTRACTS

Vol. 26, November, 1954

*The bacterial contamination of foods. B. C. Hobbs.—p. 601.

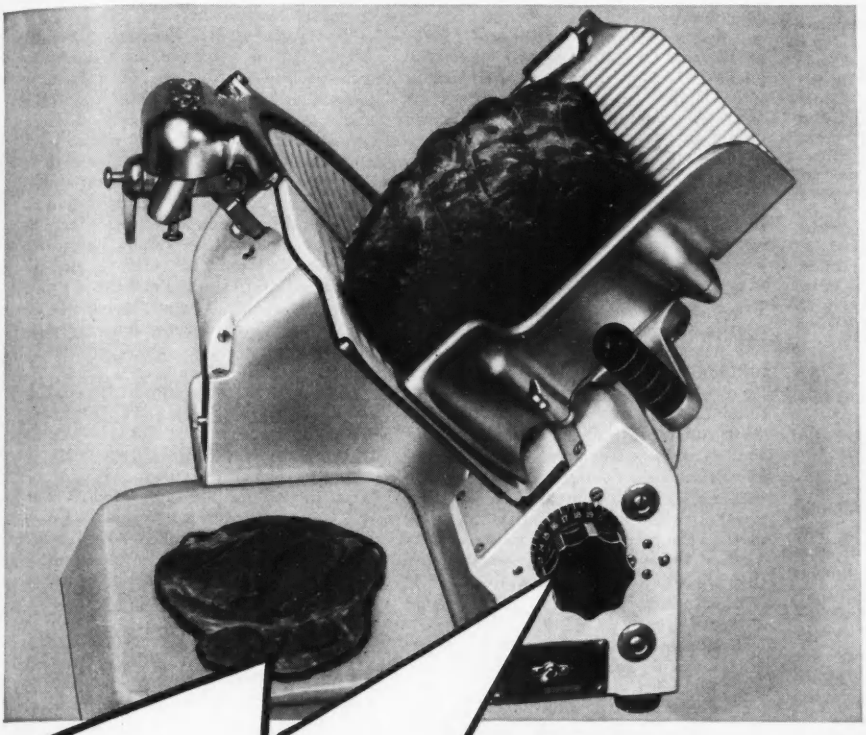
Bacterial Contamination of Foods. The article reviews various causes of food contamination. The highest incidence of food poisoning originates from made-up meat products bought already cooked at retail shops and from cooked carcass meat not eaten when freshly cooked and hot, but used a day or more after cooking. There are many examples of outbreaks of food poisoning caused by the contamination of foods by the hands of persons in retail shops, canteen kitchens, homes, and places of manufacture. Various susceptible foods which are commonly used by bakers, such as synthetic cream, eggs, and egg products, are also considered. Routine examination of food samples suspected of containing disease-causing bacteria is recommended. The author stresses, however, that a comprehensive picture must be obtained, and that not only a count of viable organisms but also the predominant types of organisms must be considered before judging the safety of a food.

FOOD TECHNOLOGY

Vol. 9, January, 1955

*Concentrates for lemonade. G. Manley Cole.—p. 38.

THE FAMOUS **GLOBE** MODEL 150 GRAVITY FEED SLICER



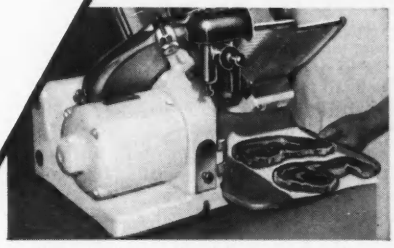
Accurate, ***profit protecting*** portion control begins the moment you use a Globe Gravity Feed Slicer. That's because *you* control the thickness of each and every slice.

Unlike hand carved slices, which vary in thickness and weight, Globe slices are absolutely uniform — making each and every serving exactly the same. That's real portion control protection!

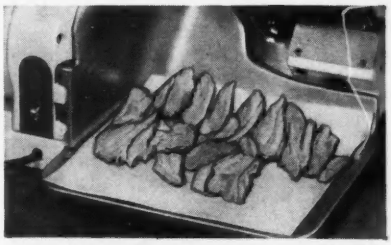
No skill or training is required to obtain complete uniform slices, the Globe is ready for *anyone* to operate the moment food is placed in its gravity feed chute.

See the Globe Slicer today —try it. See if you don't agree that it's the greatest time and money saver you could have in your kitchen.

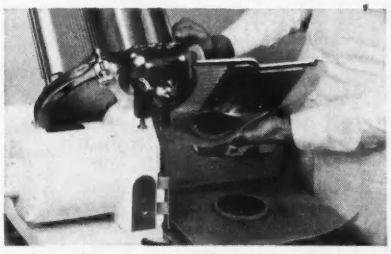
Portion Control Begins Here!



Steak—Only the Globe will slice steak up to 1¼" thick!



Turkey—Why serve lumpy, uneven hand-carved slices when Globe does it better and faster.



Hamburgers — Flavor and appearance improve when you *slice hamburger* on a Globe!

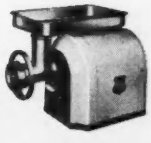
Fruits and Vegetables — For salads, soup or pie you can't beat a Globe for fast, easy quantity slicing.

Other Globe-Stimpson Products...

GLOBE SLICING MACHINE CO., INC.

STAMFORD, CONN.

GLOBE-STIMPSON COMPUTING SCALE



STIMPSON CHOPPERS

Vol. 9, February, 1955

*Dietetic foods from the viewpoint of the dietitian. R. Little.—p. 47.

*Sensory test methods. II. Effect of previous tests on consumer response to foods. H. L. Hanson, J. G. Davis, A. A. Campbell, J. H. Anderson, and H. Lineweaver.—p. 56.

*The effect of concentration on quality of frozen orange juice with particular reference to 58.5° and 42° Brix products. I. Chemical and physiological aspects. C. W. DuBois and D. I. Murdock.—p. 60.

*The effect of concentration on quality of frozen orange juice with particular reference to 58.5° and 42° Brix products. II. Bacteriological aspects. D. I. Murdock and C. W. DuBois.—p. 64.

*Citrus by-products and derivatives—an introductory survey. W. E. Baier.—p. 78.

*Amount and character of connective tissue as it relates to tenderness in beef muscle. R. L. Hiner, E. E. Anderson, and C. R. Fellers.—p. 80.

*The effects of iodized salt in processed fruits and vegetables. N. Kojima and H. D. Brown.—p. 103.

*The effect of aureomycin treatment on the shelf life of fresh poultry meat. F. Ziegler and W. J. Stadelman.—p. 107.

Concentrates for Lemonade. The development of concentrates for lemonade, with special emphasis on the frozen product, is reviewed, as well as nomenclature, standards, and processing. The term "concentrate for lemonade" was considered preferable by the producers, and when the Food and Drug Administration set standards for grades of the product, the term was officially recognized. A survey of thirty brands indicates that Brix ranges from 48.5° to 55.7°, with a mean of 52.1°. The average concentrate for lemonade approximates two-thirds juice and one-third sugar, by volume, and has a pulp content of 2.7 per cent. In studying microbiologic aspects, it was found that total counts have averaged less than 300 organisms per milliliter of reconstituted lemonade.

A Dietitian Looks at Dietetic Foods. There is need for a variety of palatable substitutes for basic foods, modified for specific purposes. To be acceptable, dietetic foods must closely approach other foods in flavor and color as well as in texture and nutritive value. They must be attractive in appearance, easy to prepare, well advertised, and easily available. For dietetic use in hospitals or in the home, they must be chemically analyzed and accurately and specifically labeled.

Effect of Previous Tests on Tasters' Response. Experiments show that consumer-test ratings of foods are influenced by previously tested samples of the same food even though the samples are presented singly; the influence occurs when two days elapse between testing of the samples as well as when only a few minutes elapse. There is a greater tendency for succeeding samples to be rated lower rather than higher than the first sample. This tendency is apparently the effect of development of a more critical attitude on the part of the judges with continued testing. Where panel members taste more than one sample of a food, the ratings given are, therefore, preference ratings for the samples tested and are not reliable in indicating how much the food is liked or disliked. These results indicate that past tasting experience of a consumer is more important than was previously supposed and that the planning and interpretation of experiments must take this fact into consideration.

Effect of Concentration on Quality of Frozen Orange Juice. Commercial packs of 58.5° Brix concentrated orange juice have been successfully made. A 58.5° Brix (sixfold) product was chosen because it fulfilled all requirements of practicability, such as ease of reconstitution, stability of cloud and flavor, and efficient manufacture. The cloud of 58.5° Brix concentrated orange juice with pulp content of 10 to 12 per cent stored at 80°, 60°, and 40°F. was considerably more stable than that of 42° Brix concentrate. Heat-stabilized concentrate is more stable than that which had not been so stabilized. Flavor stability of 42° Brix products is greater than their cloud stability, while cloud stability of 58.5° Brix orange juice exceeds its flavor stability. The flavor stability of 58.5° Brix juice was greater than that of 42° Brix. Thus, cloud stability can be used as an index of quality of 42° Brix product, while flavor stability should be used as the primary index for 58.5° Brix quality. Vitamin determinations indicate that ascorbic acid is highly stable in 58.5° Brix product. Viscosity and freezing data are presented.

Bacteriologic Aspects of Concentration of Frozen Orange Juice. The survival of selected strains of *Leuconostoc*, *Lactobacillus*, and yeast in 42°, 58.5°, and 70° Brix orange juice stored at 0°, 15°, and 40°F. was investigated. The death rates of the organisms appeared to increase with the temperature and with the concentration. The only exceptions to this were the yeasts in 42° Brix which grew at 40°F. but died at 0°F. and died even more rapidly at 15°F. The growth of these microorganisms in 12°, 20°, 30°, 42°, 58.5°, and 70° Brix concentrate at 75°F. was also investigated. Bacterial growth occurred in all concentrations through 30° Brix, while yeasts grew in concentrations through 58.5° Brix. In 70° Brix concentrate, all strains died, the *Leuconostoc* dying more rapidly than the other test organisms. In those concentrations where growth occurred, a shorter incubation period was required for microbial growth at the lower than at the higher concentrations.

Citrus By-Products and Derivatives. By-products and derivatives of citrus juice can be broadly classified under the essential oils, pectic substances, flavonoids, molasses, dried meal cattle feed, citric acid, citrates, and specialty items. The industries using these products are in the food, feed, pharmaceutical, and chemical fields. Possible uses for these products and research in the field are discussed.

Connective Tissue and Tenderness in Beef Muscle. This study showed that muscles which are used more extensively by the beef animal have larger amounts of collagenous fibers, and that, in general, collagenous and elastin fibers are factors influencing tenderness. It is emphasized that tenderness in beef is a function of many interrelated factors: breeding, feeding, management, age, period of aging the raw meat, presence of collagenous and elastin fibers, size of fibers, method of cooking the meat, and probably many others.

Iodized Salt in Processed Foods. No detectable deterioration was seen in quality due to the use of iodated or iodized salt in canned tomato juice, bulk and canned sauerkraut, canned green beans, canned whole kernel yellow corn, and bottled pickled olives. Since these products are representative of processed fruits and vegetables which contain considerable amounts of salt, it may be concluded that there should be no fear of deterioration of the quality of products due to the use of iodized rather than plain salt. It would seem wise to use iodized salt in processing vegetables and fruits to reduce the incidence of goiter.

Effect of Aureomycin on Shelf-Life of Fresh Poultry. Halves of chicken fryers were immersed for 10 min. in water solutions containing 10, 20, or 40 p.p.m. aureomycin prior to packaging. Shelf-life of the poultry stored at 36°F. was increased from 8.7 to about 14 days by this treatment. Spoilage was observed earlier by the detection of slime rather than off odor in the experimental pieces.

GASTROENTEROLOGY

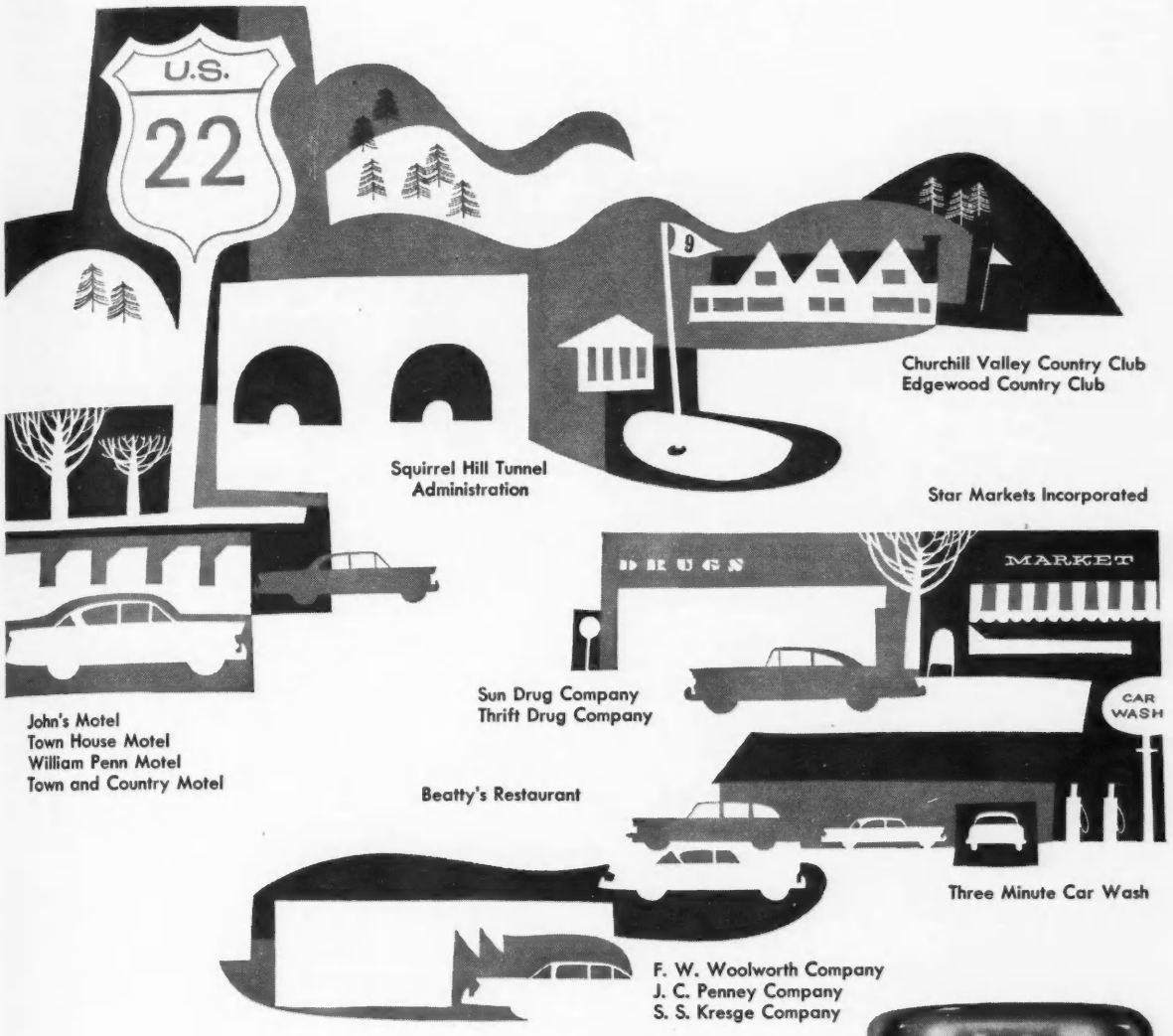
Vol. 27, December, 1954

*Problems of peptic ulcer, resurveyed. S. M. Jordon.—p. 786.

*The effect of detergent on intestinal digestion. B. Fuchs and F. J. Imgelfinger.—p. 802.

Peptic Ulcer. This survey of the problems of peptic ulcer has been divided into three catagories: etiology, diagnosis, and treatment. Acid, spasm, and local circulatory disturbance play roles in the etiology, along with the neurogenic factor. This neurogenic factor includes two spheres of influence: the antrum of the stomach, the area of gastrin influence, and the vagus nerve with its influence on motility and secretion. The hormones and emotions also enter the etiologic picture. History and X-ray hold the predominant place in diagnosis along with the hyperchlorhydria tests. Medical treatment is much the same as it has been for years: rest, both general and locally digestive, and neutralization or absorption of acid. Aluminum hydroxide and anticholinergic drugs are also being used now. Complications usually require both medical and surgical treatment. The goals of ulcer treatment remain primarily the same.

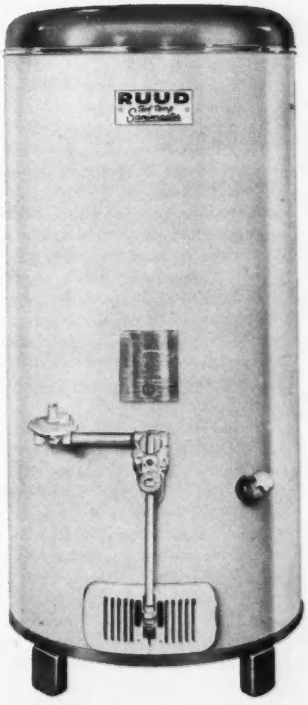
Detergents and Digestion. Since detergents are so widely employed for washing utensils and food containers and, since they are known to exert a denaturing effect on proteins and enzymes, a study was done to determine the effect of a typical anionic detergent, sodium lauryl sulphate, on intestinal digestion and absorption in human subjects. *In vivo* experiments indicated that the chance ingestion of detergent following its household use does not interfere with intestinal absorption of food. Because of enzymatic inhibition and partly because of the detergent's



Hot Water Pays, All Ways...Thanks to *GAS*

On a short stretch of Route 22 east of Pittsburgh, you'll find fifteen different commercial establishments using Gas-fired Ruud water heaters. In each case, plenty of hot water is needed, whether it's for dishwashing, coffee making and other food preparation uses, or for showers, laundries, car washing or general cleaning. Only Gas gives the vast amount of hot water they need so fast, at so little cost. A Gas water heater of the proper size, backed by the established reputation of its manufacturer, gives commercial and institutional operations all the hot water they need for every purpose.

There are complete lines of dependable Gas water heaters including economical, efficient boosters, for every large volume water heating requirement. For specifications, data and literature, call your Gas Company's representative or commercial gas water heater dealer. *American Gas Association.*



irritating effect on the bowel, larger amounts of detergent, as used in the treatment of peptic ulcer, may decrease absorption.

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

Vol. 3, January, 1955

*Frozen food problems—palatability from plant to plate.—p. 18.

*Radiation sterilization. Influence of gamma radiation on proteolytic enzyme activity of beef muscle. D. M. Doty and J. P. Wachter.—p. 61.

*Radiation sterilization. Nature of undesirable odors formed by gamma irradiation of beef. O. F. Batzer and D. M. Doty.—p. 64.

*Plant nutrients and human nutrition. Reduction of dental caries and goiter by crops fertilized with fluorine and iodine. J. F. McClendon and J. Gershon-Cohen.—p. 72.

Frozen Food Problems. Quality control is a unique problem of the rapidly growing frozen food industry. Palatability factors in a precooked frozen product must be determined to a large extent in the processing plant and must then survive a distribution chain to which they are often highly sensitive. Research has been extensive and somewhat effective, but the problems are very complex. Oxidation is the distribution problem in which most progress seems to have been made. Antioxidants help to retard quality loss. Nutritional aspects of frozen foods—retention of amino acids, minerals, and vitamins—are being studied. Storage temperature is important in maintaining precooked frozen food quality, but it is not uniformly adequate, particularly at the retail and consumer levels. Work is being carried on to develop time-temperature indicators. Probably the best available quality index for precooked frozen foods are bacteria counts. Although not directly related to all other quality factors, they do give a good picture of how carefully a given product has been handled.

Effect of Radiation on Enzyme Activity in Beef. Approximately 70 per cent of the proteinase activity in beef muscle tissue could be extracted with citrate buffer at *p*H 9.6. Irradiation with cobalt-60 at dosages of 1.6×10^6 rep. reduced the apparent proteinase activity about 50 per cent. This loss occurred largely in the fraction of the enzyme that was extractable at *p*H 9.6. At lower irradiation dosages (5×10^5 rep.), there was little reduction in proteinase activity as measured by liberation of tyrosine from casein substrate. Irradiation reduced the amount of tyrosine extractable from beef, suggesting that the amino acid is changed by irradiation.

Undesirable Odors Formed By Irradiation of Beef. Precipitates were obtained by trapping the effluent gases from irradiated meat in solutions of lead acetate, zinc acetate, and mercuric cyanide. Analyses of these precipitates indicated sulphur compounds as the source of some of the undesirable odors in irradiated meat. Glutathione determinations indicated a considerable reduction of this and/or other sulfhydryl compounds during irradiation. Fractionation of beef to locate the source of some of the off-odors suggested that they are formed from some water-soluble compound(s).

Preventing Caries and Goiter by Fertilizing with Fluorine and Iodine. Experiments were carried out to determine the increased yield of fluorine and iodine in crops grown in soil heavily fertilized with brown rock phosphate and with various iodine compounds. Diets from these crops were tested on litter-mate rats to determine whether the increased fluorine content prevented dental caries and whether the increased iodine content prevented goiter. Heavy fertilization of soil with brown rock phosphate resulted in an increased yield of fluorine in fluoriferous plants, and fertilization of the soil with various iodine compounds resulted in increased yields of iodine in the crop. The diets had a good effect on calcification of the bones in rats, and dental caries was prevented almost entirely. Rats fed diets from iodine-containing crops were spared goiters which occurred in control rats fed diets from water-cultured iodine-free crops.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 157, January 8, 1955

*Effect of eating on electrocardiograms after myocardial infarction. S. M. Levit and B. D. Dinman.—p. 122.

Vol. 157, January 22, 1955

*Insect-killing smoke in restaurant. Queries and Minor Notes.—p. 402.

Vol. 157, January 29, 1955

*Boric acid in corn canning recipe. Queries and Minor Notes.—p. 484.

Vol. 157, February 5, 1955

*Common sense vs. food faddism. Editorials and Comments.—p. 514.

Effect of Eating on Electrocardiograms after Myocardial Infarction. A study of patients with recent myocardial infarction indicates that eating alters the configuration of the electrocardiogram in a significant number of cases, which introduces a source of error. The findings suggest that there should be a modification of current electrocardiographic technique to obviate the effect of eating. Ideally, serial electrocardiograms should be performed in a fasting state; if this is not feasible, several hours should be allowed to elapse between the taking of a meal and an electrocardiogram.

Insect-Killing Smoke in Restaurant. The saturation of air in a restaurant with "Pyrenone" is discussed, which officials responsible for restaurant sanitation advocate in preference to some of the other organic agents of much higher proved toxicity. Despite the apparent harmlessness of this agent, it is desirable that the daily dosing period of about one hour be during that period in which the restaurant is not serving food. In any circumstance, it is unlikely that heavy saturation of air is desirable.

Boric Acid in Corn Canning. In answer to a query concerning the potential danger of using boric acid in a canning recipe, it is stated that a definite danger does exist. It appears that the fatal dose of boric acid in an adult is somewhat more than 15 to 20 gm., in an infant 5 to 6 gm. While the evidence for cumulative action is not incontrovertible, many isolated observations indicate that boric acid is definitely a cumulative poison. In view of its poor qualities as a preservative and the accompanying danger of ingesting doses that might prove toxic or even fatal, either at once or over a period of time, it is suggested that some other method of preservation be used in canning.

Common Sense vs. Food Faddism. The public needs more practical instruction in how to apply sound nutritional principles. The scientific detail which appears in newspapers and magazines often becomes a basis for ridiculous fads. The chief barriers to good nutrition, especially in lower income groups, are inadequate funds, lack of sound nutritional knowledge, and the influence of superstitions, both ancient and modern. Physicians should try to discover what fads their patients have fallen prey to, so that they can be warned that so-called health foods and vitamin supplements can cure only those diseases specifically caused by a nutritional deficiency and that such products unless prescribed after a careful diagnosis are a waste of time and money.

JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 212, January, 1955

A rapid, simple method for the determination of reduced, dehydro-, and total ascorbic acid in biological material. R. R. Schaffert and G. R. Kingsley.—p. 59.

*Studies on protein synthesis *in vitro*. V. The effect of diet and fasting on the incorporation of methionine-S^{35} into liver protein. J. Rutman, R. J. Rutman, and H. Tarver.—p. 95.

The amino acid requirements of man. VIII. The metabolic availability of the optical isomers of acetyltryptophan. W. C. Rose, M. J. Coon, G. F. Lambert, and E. E. Howe.—p. 201

*Proteins in multiple myeloma. III. Origin of Bence-Jones protein. F. W. Putnam and S. Hardy.—p. 361.

*Proteins in multiple myeloma. IV. Interaction with metabolic nitrogen. F. W. Putnam and S. Hardy.—p. 371.

Protein Synthesis by the Liver *in Vitro*. The effect of changing the protein content of the diet, either direct or indirect, on the ability of slices from the livers of rats to incorporate labeled methionine was found to be very significant, the highest rate of incorporation being that on a 45 per cent casein diet and the lowest on a protein-free diet. The rate on the high-protein diet was twice that on the protein-free diet. On the basis of the incorporation observed either per unit weight of animal at the time of sacrifice or per unit weight of liver, the effect of fasting on the rat previously on a low-protein or protein-free diet was to increase the rate (after one day). In contrast, the fasting of rats previously fed a diet of higher protein content resulted in a reduction in the rate. After four days' fasting, whatever the previous diet, the incorporation rate was seriously reduced from the level observed in the fed animal.

TIME IS MONEY

and new Jell-O Instant Pudding and Pie Filling makes more of it for you!

Pudding into milk

Mixture into pie shell

Knife into pie

Pie into customers

Cash into register

Five important reasons why Jell-O "Instant" is best:

1. Pudding ready to eat in 18 minutes.
2. Makes pies in less than half the usual time.
3. Delectable flavors! Chocolate! Vanilla! Butterscotch!
4. Pudding stores overnight . . . re-beats.
5. "Ready-to-serve" costs less than cooked puddings and pies.

You can get new Jell-O Instant Pudding and Pie Filling from your wholesale supplier.

Jell-O is a registered trade-mark of General Foods Corp.

Origin of Bence-Jones Protein in Multiple Myeloma. The rate of protein synthesis has been studied by use of isotopic glycine in a patient with multiple myeloma who had an abnormal serum globulin and excreted a Bence-Jones protein. The synthesis of the two abnormal proteins appeared to be an independent process. The Bence-Jones protein is rapidly excreted and is apparently derived directly from the nitrogen pool rather than via any plasma or tissue protein precursor.

Metabolic Nitrogen in Multiple Myeloma. The biosynthesis of proteins in multiple myeloma has been investigated with N^{15}-labeled glycine in a human subject with a plasma cryoglobulin and who excreted a Bence-Jones protein. No evidence was found for the origin of urinary protein from serum proteins or for any precursor relationship between the two abnormal proteins. The parallel decline in N^{15} in the glycine of the urinary protein and in the urinary urea, ammonia, and total nitrogen indicated a direct interaction with the metabolic pool of nitrogen in the synthesis of Bence-Jones protein rather than the intervention of serum or tissue protein precursors. The renal excretion of both non-protein nitrogen and protein was retarded, probably owing to kidney damage.

THE JOURNAL OF CLINICAL INVESTIGATION

Vol. 33, December, 1954

* Amino acid metabolism in infectious hepatitis. D. Y. Hsia and S. S. Gellis.—p. 1603.

Vol. 34, January, 1955

*Isotopic studies of plasma cholesterol of endogenous and exogenous origins. L. Hellman, R. S. Rosenfeld, M. L. Eidinoff, D. K. Fukushima, T. F. Gallager, C. T. Wang, and D. Adlersberg.—p. 48.

*Effects of simultaneous or prior infusion of sugars on the fate of infused protein hydrolysates. H. N. Christensen, P. B. Wilber, B. A. Coyne, and J. H. Fisher.—p. 86.

Protein Metabolism in Infectious Hepatitis. Changes in amino acid metabolism have been studied in nineteen children with infectious hepatitis. Measurements of the total urine alpha amino nitrogen by the gasometric ninhydrin-CO_2 method showed that one-third of the cases had a moderate amino-aciduria, another third had a borderline amino-aciduria, and the remaining third showed normal amino acid excretion. Plasma alpha amino nitrogen studied by the same method was high in all patients with moderate amino-aciduria and in some of those with borderline amino-aciduria. All those without increased amino excretion were within normal limits. Both the urine and plasma alpha amino nitrogen returned to normal levels on recovery. Analysis of the specific amino acids by paper partition chromatography showed a generalized amino-aciduria in all cases, with most of the increase among essential amino acids. Further investigation is needed to determine whether an additional renal defect exists.

Isotopic Studies of Plasma Cholesterol. Labeled cholesterol and acetate have been used to trace the metabolic behavior of plasma cholesterol synthesized *in vivo* or derived from the diet in human subjects with normal and elevated plasma sterol levels. From 4 to 27 per cent of a 10-mg. oral dose of labeled cholesterol appeared in the plasma, 14 to 48 per cent was recovered in the feces during the first four days, and approximately 1 per cent appeared in the urine. Traces of orally administered cholesterol-4-C^{14} could be detected in the plasma within 1 hr., and the maximum radioactivity of free and ester cholesterol was attained in 2 to 3 hr. This is in contrast to labeled plasma cholesterol synthesized *in vivo* from radioactive acetate which reached peak specific activity within 8 hr. No differences in the patterns of incorporation could be detected in two patients with hypercholesterolemia accompanying the xanthoma tuberosum syndrome when compared with subjects with normal sterol levels. Differences in the relation of free to ester cholesterol were observed during the incorporation of dietary cholesterol in a patient with hypercholesterolemia accompanying the xanthoma tuberosum syndrome and in another subject with hypercholesterolemia of the nephrotic syndrome. Aside from early differences in the appearance of biosynthetic and dietary cholesterol, the data suggest that cholesterol derived from the diet is eventually indistinguishably mixed with that synthesized in the body.

Amino Acid-Sugar Relations in Parenteral Nutrition. The presence of 10 per cent fructose, 5 per cent glucose, or 10 per cent glucose in commercial partial hydrolysates of protein increases substantially the wastes of peptides and amino acids consequent to intravenous infusion. The effect increases in the order named. The extra wastage is associated with higher peptide levels in the plasma, indicating that the disturbance of utilization of peptides is prerenal. The extra amino acid wastage is not associated with higher plasma amino acid levels, and accordingly appears to be mainly renal in origin. Slightly higher plasma amino acid levels are generally obtained during infusion of fructose-containing rather than glucose-containing hydrolysates. The extra peptide wastage is avoided, if glucose is added sterilely immediately before infusion, but reappears if the mixture is autoclaved. Although the presence of sugar in a commercial fibrin hydrolysate increases amino acid and peptide loss, it does not diminish significantly the immediate excretion of total nitrogen; on the other hand, if the sugar (glucose or fructose) is infused just before the hydrolysate, the immediate nitrogen catabolism is substantially reduced.

JOURNAL OF HEALTH, PHYSICAL EDUCATION, RECREATION

Vol. 26, January, 1955

* Nutrition and the teen-ager. F. E. Whitehead. —p. 7.

Nutrition and the Teen-Ager. The adolescent is a challenge because he has poorer food habits than younger children and often than college students. Nutrition education of adolescents needs to move effectively from an information-centered program to a behavior-centered program, if the teen-ager is actually to improve his eating habits. There are two steps that should be taken by teachers. The first is concerned with a conscientious review by the teacher of the latest findings in nutrition, and the second step is that of developing clearly defined objectives. In the first step, the teacher should be able to explain nutrition so that the students will realize it is not simply the words "vitamin," "minerals," or "calories," but a well-integrated bodily process which depends on the quality and quantity of the food eaten every day. In the second step, the teacher must set a goal for the teen-ager, perhaps a better complexion, controlling weight, or making the football team. These offer sufficient motivation on which to build an effective nutrition education program, for these objectives are realistic and attainable.

JOURNAL OF HOME ECONOMICS

Vol. 47, January, 1955

*Fresh, refrigerator stored, and frozen broccoli. E. A. Huguenard, C. H. Ladesich, and G. L. Tinklin.—p. 34.

Vol. 47, February, 1955

*Career day planning. H. R. LeBaron.—p. 91.

*The quality of starch puddings containing whey and/or nonfat milk solids. F. Hanning, J. deG. Bloch, and L. L. Siemers.—p. 107.

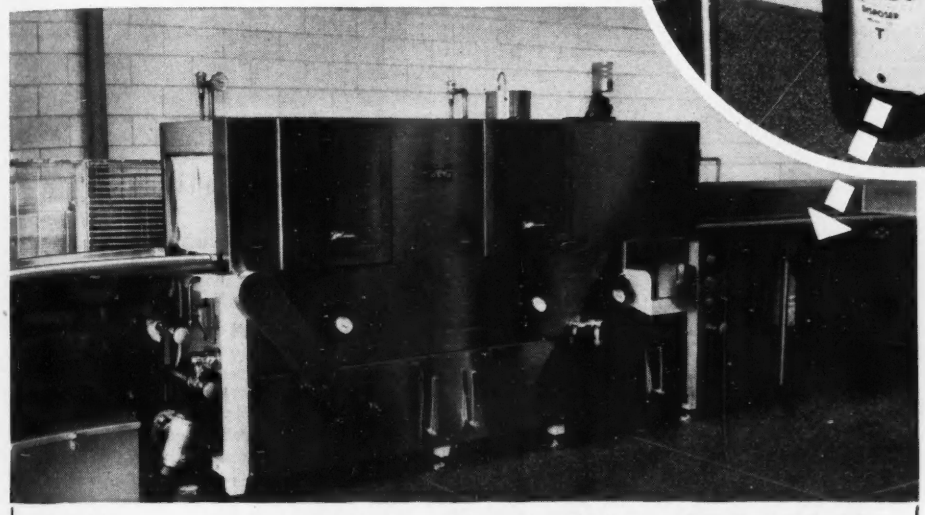
Fresh, Refrigerated, and Frozen Broccoli. Fresh and refrigerator-stored broccoli were both considered excellent sources of ascorbic acid while frozen spears and cuts were classed as good sources. Good quality fresh broccoli could be stored, satisfactorily, in the refrigerator for several days before using it and still retain a high palatability score and ascorbic acid content. The poorer quality broccoli retained a larger percentage of ascorbic acid after storage but lost palatability faster. Frozen broccoli, both spears and cuts, was slightly more palatable than was fresh. There was no apparent relation between cost and quality of the broccoli. Fresh broccoli averaged much less in cost per pound than frozen broccoli. Seasonal variation seemed to be a minor consideration, whether fresh or frozen.

Career Day Planning. Three factors influence the success of a career day: (a) careful planning and preparation by the school administrators, faculty, and students; (b) accurate, complete, and challenging explanations of careers by the visiting specialists; and (c) thoughtful appraisal and summary of the session by students and teachers after the program. The person selected to represent a profession should be well informed, speak well, and be the kind of person with whom young people like to identify themselves. Enthusiasm and an attitude of genuine pleasure and satisfaction in being a member of the profession are more important than age or outward physical characteristics. The speaker should try to stir the interest of the

Two Ways to Cut Kitchen Costs with TOLEDO

FOOD WASTE DISPOSER

"Reverso-CLEAN" action. Shreds food wastes, flushing these down the drain; fast, continuous feed. Motor reverses each time switch is turned on or when under extra load. Easily installed in standard opening, or may be equipped with cone, scrapping block, and silver guard.



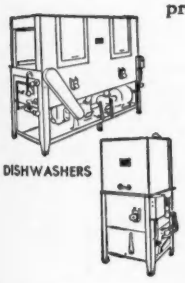
FAST . . . EFFICIENT CONVEYOR PRE-WASH

All of the features of Toledo conveyor dishwashers, plus an efficient conveyor pre-wash—combined in one machine. Your choice—(1) *Fresh Water Pre-Wash* operates directly from fresh water line. (2) *Recirculating Pre-Wash* with powerful 1 H.P. pumped pre-wash operation . . . final rinse water fed to pre-wash tank and recirculated for maximum hot water economy.

DISPOSER

Again—Toledos get the call for modern labor-saving dishwashing and food waste disposal—to *reduce kitchen costs!* This new Toledo Dishwasher combines in a single, dual-speed automatic machine a new, efficient conveyor Pre-Wash along with performance-proved Toledo wash and rinse operations. Conveyor carries dishes through pre-wash, wash and rinse.

Fast, easy, sanitary disposal of food waste is obtained with the new Toledo Disposer which has Reverso-CLEAN Action . . . self-cleaning, as shredder reverses automatically on each use, or under extra load. Check your needs . . . control costs with Toledo's complete selection of Dishwashers and Food Machines for all restaurant and institutional needs. Send for bulletin 100-J.



DISHWASHERS

TOLEDO SCALE COMPANY
Rochester Division
245 Hollenbeck St., Rochester, N. Y.

NATIONAL SANITATION FOUNDATION nSf TESTING LABORATORY MEETS STANDARD NO. 3

TOLEDO DISHWASHERS BEAR THIS SEAL OF APPROVAL

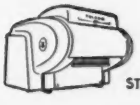
It pays . . . Go TOLEDO® all the way!

PEELERS

SAWS

SLICER

CHOPPERS



STEAK MACHINES

group so that the session will be remembered. Visual aids, such as movies or color slides, which explain the scope of the field and depict the jobs available, are particularly effective. An offer to provide information about each kind of job opportunity is always appreciated. It is a good idea, too, to allow some time for questions.

Starch Puddings Made with Whey and/or Nonfat Milk Solids. The substitution of 25 per cent whey for nonfat milk solids gave puddings of superior quality, as judged by better flavor, appearance, tender delicate structure, and smooth consistency. It may be considered that the tender delicate gel structure of "whey" puddings was caused by the higher concentration of lactose and lower protein content. These findings would have application in packaged pudding mixes that contain dried milk and to which water alone is added.

JOURNAL OF THE INDIAN MEDICAL ASSOCIATION

Vol. 24, January 1, 1955

*Amoebiasis and its management. R. M. Kasliwal. —p. 254.

Management of Amebiasis. Management of amebiasis is largely a problem of preventive or social medicine. Ordinary chlorination of drinking water sufficient to kill other bacteria may not suffice to kill this parasite and thus it may be advisable to drink boiled water. Protection of food from flies and other sources of contamination should be ensured. Carriers or cyst passers should not be employed in food handling jobs. In treating amebiasis, a proper diet which is nutritious and easily assimilable is of great importance. It should generally be a low-residue diet. Eggs, meat, vegetables, and fruits with skins peeled off and which do not have too much roughage, are permitted. Fatty and highly spiced foods are not allowed and sweetmeats and pastries are also not well-tolerated. Since there is always an associated deficiency of vitamins, especially the B-complex, a good multivitamin preparation, particularly a B-complex preparation, is useful.

JOURNAL OF NUTRITION

Vol. 54, December, 1954

*Studies on calcium metabolism. Effect of food phytates on calcium[45] intake in children on low-calcium breakfasts. F. Bronner, R. S. Harris, C. J. Maletskos, and C. E. Benda.—p. 523.

*Physical measurements of Iowa school children. E. S. Eppright and V. D. Sidwell.—p. 543.

*Relationship of estimated nutrient intakes of Iowa school children to physical and biochemical measurements. E. S. Eppright, C. Roderuck, V. D. Sidwell, and P. P. Swanson.—p. 557.

Dietary protein and tumor-host relationship in the rat. J. B. Allison, R. W. Wannemacher, Jr., R. Hilf, J. F. Migliarese, and M. L. Crossley.—p. 593.

*The failure of thyroxine and high-fat diets to modify the rate of thiamine loss from the body. S. N. Gershoff and D. M. Hegsted.—p. 609.

Phytates and Calcium Uptake in Children. Nineteen adolescent boys of inadequate intelligence, but otherwise normal, who were institutionalized under uniform nutritional and other environmental conditions, were given three types of breakfasts low in calcium: oatmeal, farina, and farina and sodium phytate. These meals contained respectively: 55, 60, and 60 ml. milk; 91, 83, and 83 mg. calcium; 116, 0, and 78 mg. phytic phosphorus; and 0.85, 0.85, and 0.85 mcg. radioactive calcium. The uptake of radioactive calcium by the boys on the oatmeal breakfast was 74 per cent as great as that of the boys on the farina breakfast; for the farina-plus-phytate meal, the uptake was 45 per cent that on the farina meal. These differences were statistically significant. Significantly less calcium was taken up in the presence of sodium phytate than in the presence of an equivalent quantity of phytic phosphorus supplied by oats.

Physical Measurements of Children. Five body measurements were made of a statewide sample of Iowa school children, whose nutrient intakes and nutritional status were studied concurrently. The means at successive ages, six through eighteen, agreed closely with norms based on a partially longitudinal study of Iowa City children. Mean weights at most ages tended to be greater than those observed in a mass study conducted in Iowa about ten years ago, but mean heights were about the same. There was some evidence of a trend toward relatively greater gains in weight than in height. By most standards of comparison, fewer girls than boys were in the so-called normal range. At twelve, fewest children were in the normal range. Overweight was more frequent among girls than boys, and among the older than the younger girls. Major differences in mean body measurements of children of successive ages were compared with mean nutrient intake. Increments in mean body weight from year to year were irregular for boys and fairly regular for girls, despite the opposite in nutrient intake. Moreover, in the teenage girls, mean weight and height tended to increase although mean nutrient consumption apparently failed to increase or in some cases, notably calcium, actually decreased.

Food Intake and Children's Nutritional Status. Relationships between levels of nutrient intake of Iowa school children and their development as revealed by body measurements; hemoglobin concentrations in blood; and serum concentrations of alkaline phosphatase, ascorbic acid, and carotenoids have been studied. Comparisons were made between 223 children with liberal intakes of calories and eight nutrients and 432 children with diets considerably lower in nutritive value. Children with the liberal diets which conformed fully to the Recommended Dietary Allowances tended to be slightly taller, heavier, and larger in leg girth than those with diets at the other extreme, which on the average were somewhat below the allowances. No significant differences in hemoglobin or serum alkaline phosphatase concentrations were noted, although certain trends worthy of further study were observed. The mean serum concentrations of ascorbic acid and carotenoids reflected the intakes of these two substances by the two groups of children, but other influences on the serum concentrations were also evident, such as age-sex differences among the children with liberal intakes.

Thiamine Deficiency and Body Stores. Young adult mice were fed thiamine-free diets containing 5 and 20 per cent fat, as well as the 5 per cent fat diet supplemented with 25 mg. thyroxine per kilogram diet. Liver and total body thiamine and cocarboxylase were determined at intervals. Although the thyroxine hastened weight loss and time of death and the high-fat diet showed the reverse effect, no difference in the rate of thiamine loss from the liver or carcass was found. It is concluded that the rate of thiamine loss depends on the thiamine content of the body or tissues and is essentially independent of the diet fed.

JOURNAL OF PEDIATRICS

Vol. 46, January, 1955

*Gastrointestinal distention in infants. A. G. Major.—p. 67.

Some peculiarities of amino acid metabolism in infancy and early childhood. K. Schreier.—p. 86.

Gastrointestinal Distention in Infants. Gastrointestinal gas is produced from food decomposition, swallowed air, and diffusion from the blood stream as established in previous studies. X-ray investigations presented in this article were carried out to evaluate further the role of swallowed air in gaseous distention. These studies indicate that air is swallowed mainly during deglutition; little, if any, air is ingested while crying or sucking as is popularly believed. The suggestion that infants normally ingest air during each inspiration has not been confirmed, although air swallowing unquestionably occurs during the first few minutes of life.

THE LANCET

No. 6850, December 11, 1954

*Clinical trial of Robaden and of cabbage juice in the treatment of gastric ulcer. R. Doll and F. Pygott.—p. 1200.

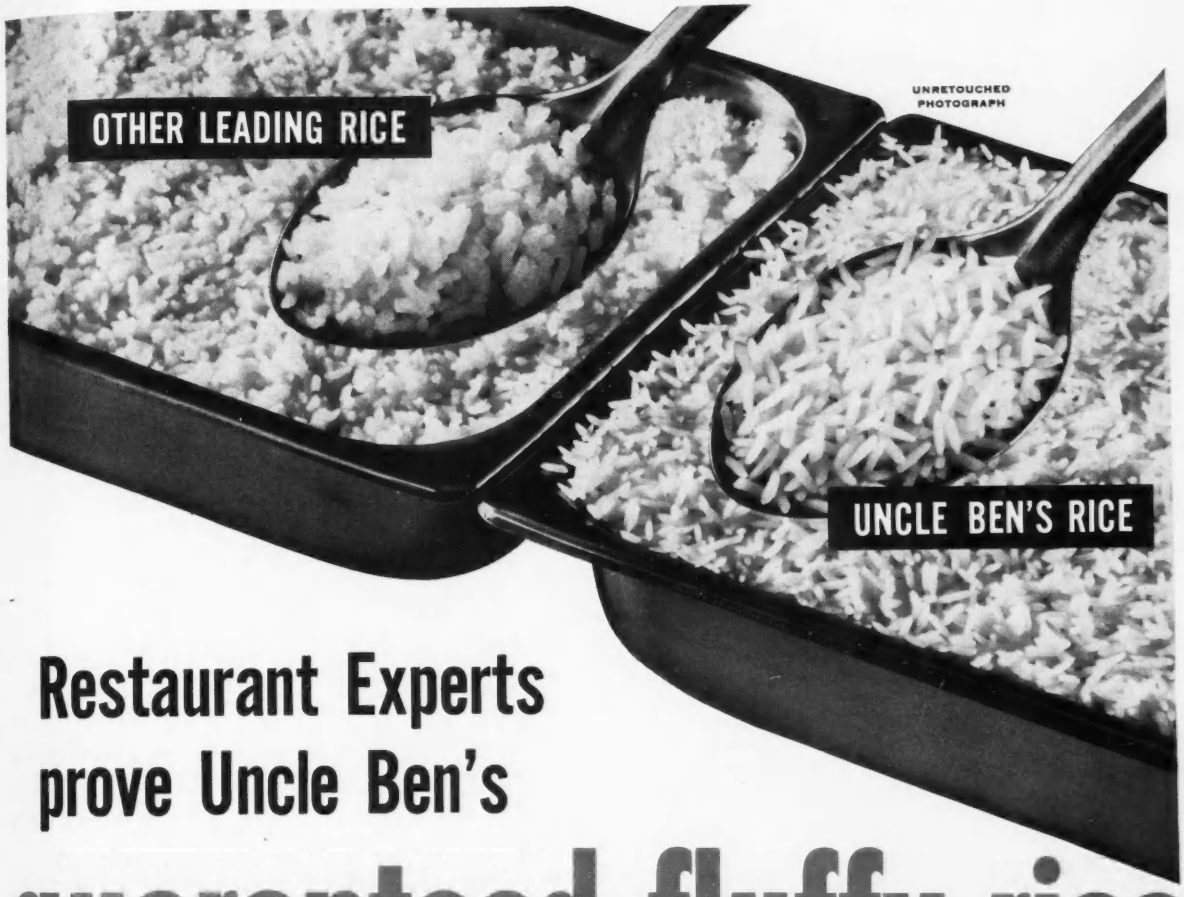
Cabbage Juice in Peptic Ulcer. The effect of Cheney's "anti-peptic-ulcer dietary factor" on the healing of gastric ulcers has been assessed by comparing the results of giving 1 liter cabbage juice daily to twenty-four in-patients with those for a control group of twenty-four in-patients treated similarly but without cabbage juice. In eleven patients in each group, the ulcer niche diminished in size by two-thirds or more in one month.

NEW YORK STATE JOURNAL OF MEDICINE

Vol. 55, January 15, 1955

*A logical approach to the problem of urinary calculi prophylaxis. H. C. Harlin.—p. 213.

Urinary Calculi Prophylaxis. In a patient forming calcium phosphate or calcium or magnesium ammonium phos-



Restaurant Experts prove Uncle Ben's guaranteed fluffy rice gives you more cooked rice per pound

We knew Uncle Ben's would cook fluffy every time. But we wanted *proof* that extra fluffiness meant more servings, bigger servings, bigger *savings* per pound.

So the restaurant experts took over. They compared Uncle Ben's with four other leading brands. Each brand was cooked according to directions under actual restaurant conditions.

The results? You can see from the picture. Uncle Ben's extra fluffiness gives you more cooked rice per pound than other leading brands. That's mighty profitable news for you!

And there's more. Uncle Ben's cooks fluffy and *stays* fluffy. Even after hours on the steam table or *days* in the refrigerator. You can prepare it during slack hours, reheat it when the rush begins and make more profitable use of your high-priced kitchen help!

The facts are obvious. Uncle Ben's looks better . . . keeps better . . . and goes further, too. Better order some today.

Uncle Ben's CONVERTED LONG GRAIN RICE

THE RESTAURANT MAN'S RICE

Only weevil-proof rice you can buy.

Free sample of Uncle Ben's and a special set of quantity recipe cards are yours for the asking. Write Converted Rice, Inc., P. O. Box 1752, Houston, Texas.

CONVERTED RICE, INC., HOUSTON, TEXAS, "Uncle Ben's" and "Converted" are trademarks of Converted Rice, Inc.

phate and/or carbonate calculi, acidification of the urine (preferably to a *pH* level of 5.5 to 6) is warranted. When a persistent urea splitting infection prohibits this, then one must resort to the regimen of Shorr, namely, the use of basic aluminum carbonate gel with a low phosphorus diet. The presence of hypercalcinuria requires the elimination of milk and milk products or any foods containing large amounts of milk. Hyperparathyroidism and Cushing's disease require surgical intervention. In a patient forming calcium oxalate calculi, foods high in oxalate, such as rhubarb, asparagus, chocolate, and cocoa, should be eliminated. High-calcium foods in the presence of hypercalcinuria should be avoided, and the addition of magnesium trisalicylate to the diet has been recommended. In patients forming uric acid and xanthine calculi, or cystine calculi, alkalinization of the urine is recommended. Precautions must be taken against the formation of precipitates which are soluble in markedly alkaline urine. A low-cystine or low-sulphur diet is effective.

NUTRITION

Vol. 8, Winter, 1954

*Food facts and food fancies. R. Harper.—p. 160.

Food Facts and Food Fancies. The author states that it is the experiences, the preferences, and the prejudices of individuals which decide whether nutritional advice is effectively followed. He discusses the difficulties of describing eating and drinking experiences; the role of the different senses in eating and drinking; pleasures and preferences; social, cultural, and related influences; and food and palatability under conditions of stress. Innumerable things influence the eating and drinking habits of individuals; these "tangled influences," however, are not necessarily inextricable. A start has been made toward the necessary systemization of knowledge about food habits and food preferences. He cites, as an example, the *Manual for the Study of Food Habits* published by the National Research Council, which systematically classifies the relevant literature under a series of subheadings such as food patterns, the social organizations of food, acquisition of food patterns by the younger generation, stability and change in food patterns, and so on.

PUBLIC HEALTH REPORTS

Vol. 70, January, 1955

Dining car sanitation in the United States. W. H. Megonnell and E. C. Garthe.—p. 25.

*High blood pressure. Research progress report. W. H. Stewart.—p. 64.

Vol. 70, February, 1955

*Nutrition for school children.—p. 175.

*Food and milk sanitation.—p. 180.

*Nutrition in institutions.—p. 200.

High Blood Pressure. Of the estimated 10 million persons with some form of cardiovascular disease, at least 4,600,000 have high blood pressure. Hypertension is far more common in women than in men, by a ratio of about two to one. On the other hand, it is less frequently fatal in women. In view of the fact that as recently as six years ago there were no drugs especially satisfactory for treatment of hypertension, it is not surprising that the ideal agent has not yet been found. It is even too early to determine fully the benefits from drugs presently in use. Surgical and dietary therapies are being improved and continuing to be used, though perhaps not as much as in the past. At no time, however, has surgery been employed as extensively as diet therapy, which continues to be useful. Diet therapy usually falls into one of five groups: (a) low-sodium diets, (b) low-protein diets, (c) low-cholesterol diets, (d) low caloric diets, and the (e) rice diet.

Public Health Practice as Related to Nutrition. This issue is devoted to reports of papers presented at the recent meeting of the American Public Health Association. The section on "Nutrition for School Children" includes a paper by A. E. Hill, who points out that in this country only 35 per cent of all school children have good diets. He says that in serving lunches, schools have an excellent opportunity to teach by example, as well as by classroom instruction, the proper selection of an adequate and nutritious diet. Another report recommends periodic sanitary inspection of school lunchrooms and periodic review of the way the lunch programs are used for educational purposes to provide the bases for improved school sanitation and health education programs . . . A paper presented by Ercel S. Eppright states that school children in Iowa lack sufficient calcium and ascorbic acid. They tend to follow the eating patterns previously observed for their parents. Most conspicuous for poor diets were the teen-age girls . . . Experience in trying to organize a local milk laboratory approval program is described in the section "Food and Milk Sanitation." The objectives of the National Food and Beverage Council are discussed and equipment advances in the dairy industry are described . . . Cooperation between state and local health agencies is the topic of a paper in the "Nutrition in Institutions" section. The author believes that state consultation services should be made available in many areas—in preplanning kitchen layout, in teaching best use of equipment, in menu planning, in food purchasing, in food preparation and serving, in control of wastes, and in cost control. Food planning in institutions, standards for hospital diets, and food practices in nursing homes are the subjects of other papers in this section.

SCIENCE

Vol. 121, January 7, 1955

*Hydrolyzed fish protein from the flesh of waste fish. G. B. Mohanty and A. B. Roy.—p. 41.

Hydrolyzed Fish Protein from Waste Fish. In India, protein has been extracted from the flesh of sharks and rays in experiments resulting from attempts to find untapped resources of cheap protein. The hydrolyzed fish protein contains all the principal amino acids in amounts that are fairly adequate in comparison with other food products. This product is useful in treating patients with malnutrition, tuberculosis, and duodenal and ventricular ulcers, and as a supplement to the diets of convalescent patients. The general properties of hydrolyzed fish protein are: (a) it is easily soluble in water; (b) the keeping quality in powder form is quite good; and (c) the whipping power is greater than that of egg albumen.

SOUTHERN MEDICAL JOURNAL

Vol. 48, January, 1955

*The treatment of hyperpotassemia: Some observations on the use of a carbonic anhydrase inhibitor as a therapeutic aid. V. Moseley and N. B. Baroody.—p. 1.

Treatment of Hyperpotassemia. A brief outline is presented of the various clinical states in which an excessive rise in serum potassium levels may be anticipated. Hydration, replacement of sodium and chloride deficits, and the establishment of an adequate urinary output will usually correct hyperkalemia. When urinary output is diminished, the administration of dextrose solutions and insulin may prove of material benefit by causing potassium to be returned to the intracellular space. Along with these measures, it is essential to withhold potassium-containing foods and fluids and to reduce catabolic activity to a minimum by producing an adequate caloric intake of a non-nitrogenous and potassium-free type.

ADULT LEADERSHIP

Vol. 3, February, 1955

*Trust and consequences. G. Mellinger.—p. 17.

*Teamwork—key to production. S. E. Seashore.—p. 20.

Trust and Consequences. Do the members of your group agree with you but forget to carry out their part of the bargain? Research has shown that lack of confidence in each other is primarily the cause for such a break-down, rather than lack of communication. In working situations, particularly, subordinates may hesitate to disagree with their superiors for lack of trust. Such barriers to understanding, resulting from lack of trust, must be broken down by convincing others that we are worthy of their trust. This is sometimes difficult. The superior may sincerely believe that he *is* trustworthy. However, analysis of his attitude may show that although he wants his staff to let him know when they disagree with him, his success as a leader also depends, in part, on the continued support and respect of others. Thus, although he acknowledges the right of those under him to criticize, he resents it when they do. The modern leader must convince himself as well as his staff that he wants them to think independently. Three suggestions for promoting confidence-inspiring leadership are given.

Teamwork. Good group spirit may

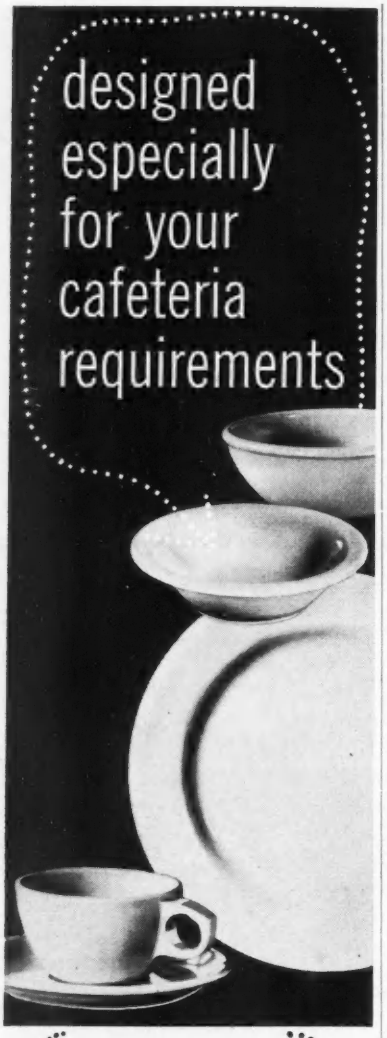
A rendezvous with elegance

The Pump Room at the Ambassador, in Chicago, is internationally known as a meeting place for the famous and a rendezvous for connoisseurs of good food. Its "flaming sword" service typifies the originality and thoughtfulness expressed in every detail. Spices are important to the master chefs of this and other famed eating places. They choose Sexton spices because they appreciate the meticulous care we take in selecting, milling, and blending these spices to meet their exacting needs.

Hotels Ambassador, Pump Room, Chicago

Sexton Quality Foods

JOHN SEXTON & CO., CHICAGO, 1955



ARROWHEAD, today's leading quality, non-breaking plastic dinnerware, gives you greater savings, greater service!

- Practically indestructible, heavy duty tableware... can save you up to 80% in replacement costs.
- Attractive, graceful styling in beautiful, harmonizing pastel colors.
- Easy to handle, light in weight, easily stacked.
- Sanitary... impervious to boiling water, safe in all dishwashers.
- Complete range of cafeteria items including Arrowhead Cafeteria Trays, Efficiency Ware, Crystalon Tumblers.

Ask for the genuine

ARROWHEAD

Melmac® Plastic Tableware

FIRST because it's FINEST

international molded plastics, inc.
Dept. ADA455 Cleveland 9, Ohio

mean increased productivity—and then again it may not. Central to the study of group functioning has been the concept of group cohesiveness. Groups may display either low or high cohesiveness. The low-cohesive group may have many fringe members; it may show a tendency towards unresolved differences among members; and it may rate low in teamwork. The high-cohesive group is likely to have a tightly-knit membership and show uniformity among members in their attitudes on issues affecting the group, and there is likely to be effective teamwork. A study in industry showed that members of the cohesive group have less anxiety and their productivity is likely to be similar to that of all the members of the group. This average productivity was considerably different from that of low-cohesive groups. However, the standard was not necessarily a high one. The lowest as well as the highest productivity came from high-cohesive groups. Further study indicated that those high-cohesive groups with the highest production records had a high sense of security in relation to the company, and the converse was also true. In promoting programs involving group activities, it is clear that much is to be gained by encouraging the formation of cohesive groups which will generate loyalties, stability, and member satisfactions. However, since such groups are also more independent of their formal leaders and of the larger organization, greater demands are placed on planning and administrative leaders of the organization to induce group goals which are also consistent with over-all objectives.

ALLIED FOOD AND BEVERAGE

Vol. 19, December, 1954

*How does your restaurant compare in these criticisms?—p. 7.

How your trade association helps you.—p. 9.

*Take a look at your menu.—p. 14.

*How well do you know coffee?—p. 29.

What's Wrong with Your Restaurant? A midwest editor has listed a number of observations which he feels are general criticisms of restaurants: (1) Nine out of ten food establishments either should hire cooks or go out of business. (2) A disgruntled waitress can lose business fast; conversely, the waitress who tries to please will likely build repeat business. (3) Every restaurant should take inventory of its dishes, glasses, and so on, and discard everything which is cracked. (4) A high percentage of establishments lack a "friendly atmosphere." (5) Every eating place should attempt to have a specialty. (6) Too few cooks realize there are other ways of preparing food besides frying. (7) Exhaust fans should be checked more often. (8) Not all customers like to sit in booths; many booths are not comfortable. (9) Invite customers to visit the kitchen; the kitchen employees will have extra incentive to keep things in order. (10) Well operated places never feature arguments among employees in front of customers.

Look at Your Menu. Your menu represents you, the management. A clean menu suggests that you have a clean sanitary kitchen. Legible printing, with proper spacing and attractive layout, tells your customer you are planning on caring for his food needs in the same manner. Colorless, lifeless menus suggest lifeless, drab food. Your menu is taking your place. Is it fit for duty?

Coffee Facts. Although coffee is the favorite U. S. hot beverage, there is a general lack of information about it. Coffee is a fruit product. The coffee tree bears a flower resembling an orange blossom which is heavy with a jasmin-like fragrance. The tree itself is a fragile, tropical plant. Its survival depends on an abundance of water, the proper amount of sunshine, and complete protection from frost. The fruit is similar to our edible cherries and is called a "cherry." The entire annual crop of a coffee tree produces only about 1 lb. roasted coffee. The tree is five years old before it bears fruit. Every coffee cherry is picked by hand. A good picker can harvest as much as 200 to 250 lb. cherries a day, enough to produce 40 to 50 lb. cleaned coffee. Before the red coffee cherries are reduced to green beans, the outer skin must be removed, the sticky pulp beneath fermented, the parchment-like husk under the pulp removed, and the two beans separated from the innermost silver skin. About 118 lb. green beans are needed to produce 100 lb. roasted coffee.

AMERICAN RESTAURANT MAGAZINE

Vol. 39, February, 1955

*Light dishes with heavy customer appeal. I. L. Dolan.—p. 50.

*Restaurant rest rooms speak for themselves. W. E. Kramer.—p. 96.

*Pointers for more profitable food preparation and service. C. E. Blackburne.—p. 124.

Dishes with Customer Appeal. Desserts and salads "on the light side" have great customer appeal. Today both men and women are waist-line watchers, and the old idea that only women watch calories and choose a salad for the midday meal is outmoded. Well planned salads afford just enough food to satisfy the customer and enough profit to satisfy the establishment. Cling peaches are appealing and popular and fill the bill for a simple, yet tasty and light salad or dessert. Salads made with cling peaches can be prepared quickly and easily, and great variety can be obtained in both salads and desserts. The article contains recipes for popular desserts and salads.

Restrooms Speak for Themselves. Few customers take the time to examine the kitchens of the restaurants in which they eat, but 90 per cent see the restrooms and from their appearance form an opinion of the restaurant as a whole. Cleanliness of the restroom is an important factor, but not the only one, in making a good impression on the customer. Old fixtures are frequently inadequate to meet present needs. Through improper cleaning or carelessness in the past, fixtures may be chipped and

PATTERNS GALORE—*Packed in cartons—Ready to ship!*

THE HOSPITALITY GROUP

by SYRACUSE *China*

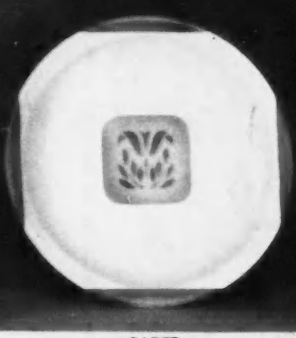
These patterns in Syracuse China's famous Hospitality Group are all "open stock" . . . competitively priced, long-lasting in use and low in replacement cost. They're packed in cartons, *ready for immediate shipment* . . . backed by large reserve stocks that only a leading manufacturer like Syracuse can maintain.

These patterns are now available from your Syracuse China dealer and from factory stock. See them soon, or write to Syracuse for free descriptive folders showing items available in each pattern.

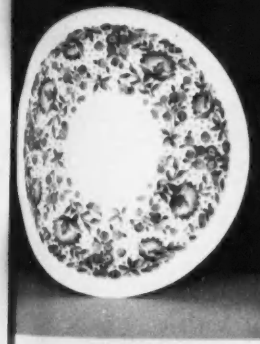
SUDAN

MILLBROOK

GREEN MOHAWK

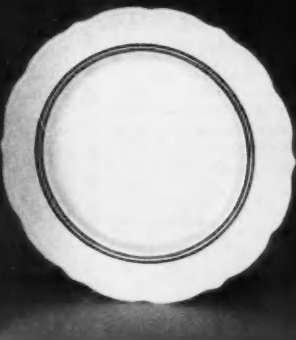


CADET



ROXBURY

COLONIAL



OLYMPIA

CONCORD GREEN

Have you any HOT FOODS to move today!

PORTABLE
AERVOID
REG. U.S. PAT. OFF.
Vacuum Insulated
HOT FOOD, SOUP and COFFEE CARRIERS
BEGIN WHERE COOKING KETTLES AND COFFEE URNS LEAVE OFF

INSTITUTIONS - HOSPITALS

When you have hot foods, hot soup, hot coffee to be serviced a distance from your kitchens . . . THAT'S WHERE PORTABLE AerVoiD VACUUM INSULATED HOT FOOD AND LIQUID CARRIERS COME IN.

AerVoiDs begin where cooking kettles and coffee urns, leave off. They provide a means by which the output of stationary cooking equipment can readily be transported and serviced at points distant from your kitchens . . . expediting service, sav'ng time, money, labor.

AerVoiDs cost but a fraction of the cost of urns, steam tables, cooking kettles. Made of stainless steel, sanitary, high vacuum insulation (exclusive with AerVoiDs) that insures thermal efficiency to keep foods hot for servicing even miles from a central kitchen and with high retention of all the essential food elements and flavors as demonstrated by laboratory tests.

Not being anchored to one location, portable AerVoiDs open up immense new possibilities in expediting mass feeding. The only "complete line" of portable hot food servicing equipment on the market . . . sizes and types to feed thousands or just a few.

Experienced mass feeding consultants to help you without cost.

Write for illustrated price list JD-54 Compare. See how much less portable AerVoiDs cost . . . how much you can save.

VACUUM CAN COMPANY
19 SOUTH HOYNE AVENUE
CHICAGO 12, ILLINOIS

scratched and are thus more susceptible to stains. They are also considerably harder to keep clean than new fixtures. Some features of restrooms may be extremely annoying to people. Women, for instance, dislike lavatories which have no room to place purses or packages. Also, most people dislike self-closing faucets. Although they may save water, they are often a source of irritation to patrons and the small saving is, therefore, not worth the price of an irritated customer.

Mass Feeding Methods. Achieving closer controls, cutting costs, and pleasing customers often depend on the methods used in cooking foods. This article gives pointers on facilitating food service, maintaining portion control, "controling controls," and practicing seasonal economies. An extensive table of quantities of more than 150 foods needed to serve 100 people is presented, along with recommendations for converting these quantities for larger numbers up to 1000 people.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 18, January, 1955
*Pay-roll cost control. P. Fairbrook.—p. 44.
Vol. 18, February, 1955
*The men who came to dinner. L. E. Horton.—p. 46.

Payroll Cost Control. Control of labor costs requires application of scientific management and the use of statistics for purposes of analysis and evaluation. Unlike raw materials, such as food or overhead costs, they are not as flexible to control. And, unlike raw materials, human beings have feelings, desires, and independent minds which need recognition. Preplanning the use of labor is a basic factor affecting payroll costs. This involves a critical analysis of over-all payroll needs as it relates to each hour of the day. Individual jobs should be evaluated with possible improvement of methods. The future payroll of regular and extra employees should be budgeted. The advantages and disadvantages of regular vs. extra labor should be considered.

Successful Monthly Parties. Parties in residence halls keep the food service interesting and out of the proverbial rut of "boarding school" meals. At Bowling Green State University, party nights are announced in advance, and each month, there is a special meal, usually coinciding with some holiday. Students' regular meals are not slighted in order to provide for the party once a month within the cost budget. Careful planning by the heads of the residence halls provides for the meals without extra cost. Menus are written long enough ahead to provide the cooks with copies so that they can prepare things when they have time. One advantage to the students of the monthly parties is that they acquire social graces which are so easy to forget in the routine of residence hall meals. The invited guests, the students, the faculty, and the dietary staff all agree that the parties are always fun.

COOKING FOR PROFIT

Vol. 24, December, 1954
*Sauce—chef's magic.—p. 12.
*Poultry stuffings.—p. 22.

Sauces. All fine cooking depends for its excellence on the quality of its sauces. A sauce by its special flavor or texture must complement and enhance the food with which it is served. With a distinctive sauce you can serve a dish that would otherwise be nutritious and wholesome but not necessarily appetizing. Sauces can be used to help extend a food budget by improving the appearance and flavor of less expensive seafoods and the not-so-choice cuts of meat. Likewise, there is no better solution to the problem of what to do with leftovers than to combine them with sauces. Sauces can also make the finest foods even better. White sauce is a universal favorite for vegetables, fish, or chicken. Hollandaise is an excellent basic sauce. Mornay sauce is another favorite. Proper seasoning and the use of herbs and spices can add zest to your sauces, but be careful not to overdo a good thing; strive for a delicate flavor. Always follow the recipe's directions faithfully.

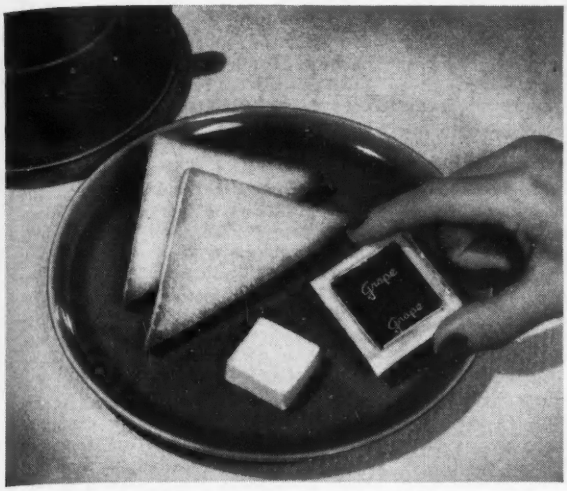
Poultry Stuffings. This article presents the recommendations for cooking and refrigerating of poultry stuffings released by the American Institute of Baking, as worked out after bacteriologic studies.

FOOD ENGINEERING

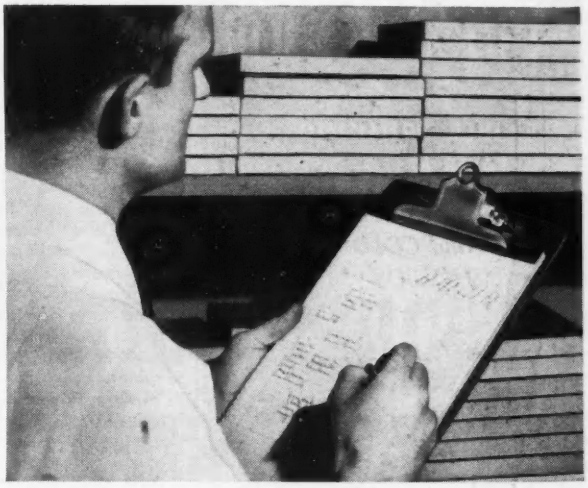
Vol. 26, December, 1954
*Frees refrigerator door of ice.—p. 9.
*This practical program curbs absenteeism. B. J. Covner.—p. 57.
*MSG's power to perk up foods. N. F. Girardot and D. R. Peryam.—p. 71.
Vol. 27, January, 1955
*This suggestion system sparks work simplification. I. C. Miller.—p. 59.
*Low-lactose concentrate makes better ice cream. J. J. Sampey and C. E. Neubeck.—p. 68.
Vol. 27, February, 1955
*Peeling by hot air-blast. B. Pilorz.—p. 68.
*Now—orange concentrate with 95% flavor esters. C. E. Wright.—p. 70.
*New casing for food can be eaten.—p. 105.

Frees Freezer Door. Does your freezer door stick? Condensation and moisture has a bad habit of forming an icy seal around freezer doors, thus making them difficult to open. A door heater can eliminate the old hammer-and-chisel method of removing such ice. Two coil-heating wires are installed under a facing plate around the edge of the door. The thermostatic controls allow heat enough to melt ice and dry condensation of moisture. Operational expense is negligible, and total cost of installing the system is about $100.

Curb Absenteeism. Stay-away-ism drops as more employees feel free to discuss things with their bosses. Another influence to absenteeism is called "nature of work" or job status. Included in this are the job's reputation for desirability, the degree of skill required, wage incentive system, and physical aspects of the job, such as strength required and whether it is performed



CONVENIENT—No work involved with PC's—all you have to do is place it on the plate. It reaches customer in neat, sanitary condition.



MEASURED COSTS—No labor costs or waste of employees' time. You can always tell how many servings you have on hand. Costs can be measured to the penny.

The greatest development in portion control*

KRAFT PC* PACK

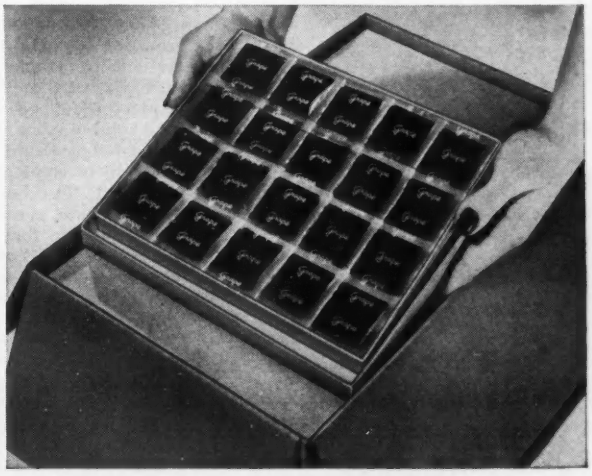
Individual servings of finest jams, jellies and table syrup in sealed plastic containers deliver many profit-making advantages

Kraft PC Packs are the answer if you want to serve top-quality jams, jellies and table syrup without waste or bother. These individual portions have been especially designed by Kraft for the hotel and restaurant trade and their wide usage is indicative of their practicability and popularity. **WIDE VARIETY**—Jams and jellies available in ½-oz. size in 6 popular varieties: grape jelly, apple jelly, orange marmalade, strawberry jam, currant jelly, cranberry sauce. Maple-flavored table syrup available in 1½-oz. size.

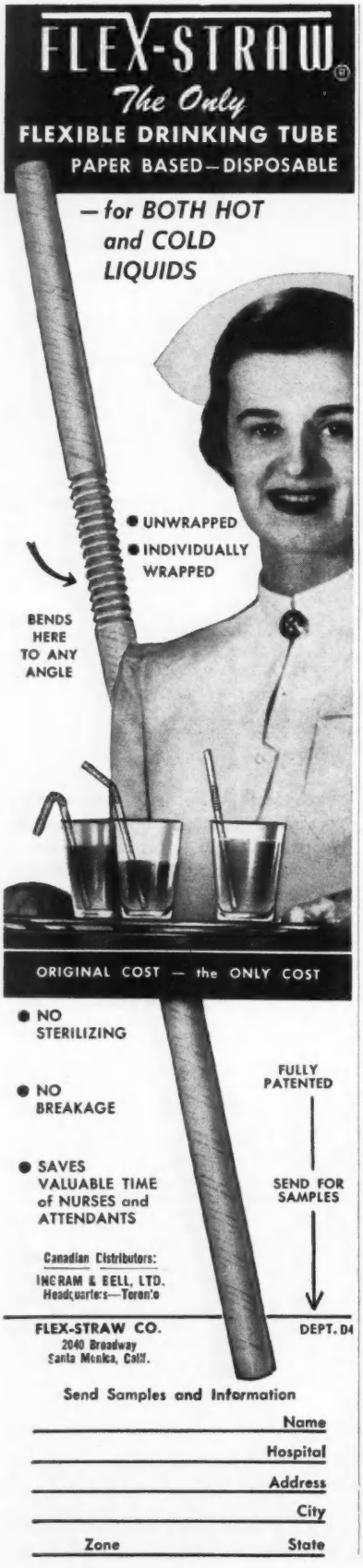
KRAFT FOODS COMPANY
500 Peshtigo Court • Chicago 90, Illinois

The Nation's Taste is Your Best Buying Guide

EXACT SERVINGS—Each PC is a just-right serving. Neither too skimpy to cause customer complaints . . . nor too generous to cut into profits.



PACKED FOR EFFICIENT HANDLING—Packed 20 to a tray—10 trays to a carton. Will store compactly in a minimum of space. No refrigeration required.



standing or sitting. A study was made in which the duties of persons on greatly simplified jobs were made more complicated by combining several jobs into one. Absenteeism dropped and productivity generally improved. This technique is generally known as "job enlargement." The resulting rise in work-interest and job satisfaction accounted for the uptrend in attendance. Absenteeism has not been established as essentially a "female problem." There is reason to believe that women who are "work-destined" will be absent less often than those for whom work is only a short-range activity. Staying away from a job can no longer be intelligently viewed simply as a character trait of the individual.

MSG's Power to Perk Up Foods. Studies at the Quartermaster Food and Container Institute in Chicago have proved that monosodium glutamate (MSG) has a definite effect on consumer preference for certain foods. In the investigation, fifty foods or recipes were used. Final analysis showed that: (a) twenty-five of the products were definitely improved; (b) three others showed a trend toward improvement; (c) eighteen were unchanged; and (d) four were definitely harmed. Before the experiments, it was anticipated that the effectiveness of MSG would depend on the food class or flavor type, and although there was a tendency for similar foods to give similar results, it was not consistently true. Two types of testing were used: (a) difference testing by a trained panel whose members were selected on the basis of skill in detecting flavor differences caused by MSG and (b) consumer preference testing using some 650 employees of the Chicago Quartermaster Depot. The study continued over eighteen months and involved about 2150 individual preference tests. In compiling the resulting data, it was found that canned vegetables were most consistently improved by MSG. Meat, poultry, and fish items, in general, were also improved, but results with miscellaneous foods and recipes were much less favorable to MSG, although of four soups tested, three were improved.

Suggestion System. A large manufacturing company discovered that suggestions from employees "pay off" in excellent results. The company pays employees for good suggestions, thus far a total of more than $150,000. To encourage suggestions, a booklet for distribution to employees by foremen was developed. The booklet, shown in its complete form, is simple, telling how the employee can find improvements by observation and how he can develop a way of improving work efficiency. The booklet also cites examples of employees who have thought of ideas which brought them cash and how an employee can present his suggestion in writing.

Low-Lactose Concentrate for Better Ice Cream. Application of a new process in making concentrated milk products now makes it possible to produce ice cream that is superior in texture and resistance to heat shock and which has an increased protein content. The new technique is to convert part of the lactose in the milk concentrate to the simple, more soluble sugars, glucose and galactose, which allows an increase in the solids-not-fat in the ice cream mix to be raised from 10–11 per cent to 13–14 per cent without danger of lactose crystalization (sandiness). A fundamental solution to the problem of sandiness is the hydrolysis of lactose into its component monosaccharides, using the enzyme, lactase. Generally, only 15 to 20 per cent of the lactose in skim milk concentrates need to be hydrolyzed to permit their use in preparing ice cream of high skim-milk-solids content. The method of producing the lactase-hydrolyzed skim milk concentrates is described, as well as procedures for using it in making ice cream.

Air-Blast Tomato Peeler. A new tomato peeling machine for canneries which removes the skins from tomatoes without affecting the tomato flesh has been developed. When the skins are removed, they are paper-thin and translucent, leaving the flesh directly below the skin, which is high in red pigment and ascorbic acid, intact. This peeler exposes the tomatoes for a very short time to a 650° to 700°F., high-velocity wind blast, during which time the tomatoes are gently revolved to expose their entire surfaces to the heated gases. At the instant the high heat causes skins to split and lift away from the tomato, the wind blast tears them from the flesh in strips.

Improved Orange Concentrate. One Florida concentrate company has developed a "freeze-out" method of producing frozen orange juice in which 95 per cent of the original flavor and fruit sugars are retained, through conservation of the aromatic volatile oils which give orange juice its flavor. By this new process, only the water is evaporated. The cost of producing the superior orange concentrate is less than 0.0015 cents per 6-oz. can above conventional processes.

Edible Food Casing. A new sausage casing of edible vegetable origin, and which also has desirable commercial properties such as eye appeal, tenderness, strength, palatability, and size uniformity, has been developed. The casing is made from sodium alginate—a purified, edible seaweed extractive. The casing will probably be used first for pork sausage links in place of the natural sheep casing now being used. Later, it will be used for frankfurters and dried sausage products, such as salami and thuringer.

FOOD SERVICE

Vol. 17, January, 1955

*The future of the food service industry. W. J. Sawall.—p. 13.

Simplification is the answer. J. R. Myers.—p. 15.

Industry's Future. The food service industry in 1960 should be a $20 billion business as compared to approximately $16 billion today. Modern techniques applied to the problems of the industry are a must for those managers who will progress with the times. Offering better pay to attract a better type of employee

YEAR AFTER YEAR AFTER YEAR . . .

Primex Performance wins more friends!

IT'S TRUE! For more than a quarter-century, more and more institutions have adopted Primex for their deep frying. Why? Simply because they have found that with this top-quality frying fat they can always turn out fried foods with the crisp, appetizing taste that people like.

Primex has every quality you can ask for in a frying medium: bland flavor . . . high smoke point . . . freedom from rancidity . . . digestibility! Yes, all this, plus longer frying life—for maximum production at minimum cost.

When it comes to frying, you just can't beat Primex. Try Primex for a month and you'll agree.

ALL-VEGETABLE
ALL-HYDROGENATED

PRIMEX

The "Longer Frying Life" Fat

MADE BY PROCTER & GAMBLE — USED BY COUNTLESS INSTITUTIONS

has been found to be well worth the added cost. The importance of college training for managers had raised the prestige of this type of career. Effective selection and training of employees is also proving its worth. Research and the development of new machines is a great asset in food production, and equipment manufacturers, as well as food researchers, have come to realize the importance and size of this industry.

FORECAST FOR HOME ECONOMISTS

Vol. 70, January, 1955

*Operation food control. D. J. Clark.—p. 16.

For a happier New Year, add fruits. G. P. Ryan.—p. 28.

Diet by the Basic 7. A four-week experiment of eating by the Basic 7 was undertaken by three underweight and three overweight girls as a high school project. At the end of the period, the underweight girls had gained in weight and the overweight girls had lost. In addition to the Basic 7, the underweight girls were allowed some sweets.

HOSPITALS

Vol. 29, February, 1955

*Employee training is the yeast in the bread. S. M. Hartt.—p. 101.

Controls in the Dietary Department. Dietary departments often need "circuit breakers" applied at control points to insure smooth, efficient operation. The points at which controls should be placed are: (a) requisitions for food or supplies, (b) purchasing, (c) receiving, (d) storing, (e) prepreparation and preparation, and (f) service. Other checks may need to be instituted and operations scrutinized in an effort to set up management control, i.e., proper use of professional time, job evaluations and analyses, proper use of tools, time and temperature checks, standardized recipes and portion control, and in-service training.

HOTEL MANAGEMENT

Vol. 67, January, 1955

*Needed—a realistic approach to menu pricing. C. V. Kane.—p. 40.

How to speed up banquet service. A. W. Dana.—p. 55.

*Greater turkey yields through new cooking method. M. Baley.—p. 58.

Menu Pricing. It is no longer true that food cost control is the only dominant factor in food profits. Payroll expenses have increased to the point where they sometimes exceed food costs. Payroll control is, therefore, just as important as food cost control. Precosting menus is often misleading because it only covers one phase of restaurant operations. The cheapest foods are often the most time-consuming to prepare; thus high-labor items should either be avoided on the menu or pricing policies should be revised to consider labor cost involved.

Roast-Poaching Turkey. A new method of roast-poaching cut-up turkey parts is said to produce 50 per cent greater yields of cooked meat and offer cost savings. In an experiment, the whole bird roasted in a 325°F. oven gave 42 per cent yield, whereas by the new method cooked at the same temperature, but in half the time, the yield was 62.7 per cent cooked usable meat. The roast-poaching method includes browning the cut-up parts in a 325°F. oven for 15 to 20 min., then adding water (about ¼ in. in the pan), and finishing roasting for about 3 hr. Advantages are: (a) turkey may be purchased in cut-up form, thus saving labor; (b) less oven space is required; (c) cooking time is cut in half; (d) better portion control results from easier slicing by machine; and (e) about 1½ qt. valuable stock is saved from the roasting.

INSTITUTIONAL FEEDING AND HOUSING

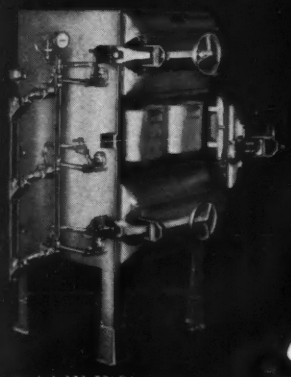
Vol. 4, February, 1955

*USAC student union serves college and community.—p. 8.

*The facts about MSG. R. Hockett.—p. 28.

*Tips on menu making.—p. 40.

University Food Service. An extensive foods operation has been made part of the function of the new Student Union of Utah State Agricultural College, Logan. The operation combines a 325-seat cafeteria; a daily, two-meal serving of 190 women residents; and a large fountain operation, plus extensive catering facilities. Some five hundred meals a day are served in the cafeteria,



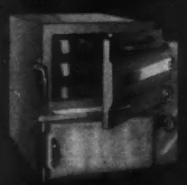
Model 101.3B Direct connected, 3 compartment Steam-Chef. Capacity 6 bushels. For kitchens serving up to 800 persons. Steam-Chefs are available in 2, 3 or 4 compartment models.

HELP for BUSY KITCHENS

STEAM-CHEF and Steamcraft

• Easier Cooking • Time Saving • Food Saving • Fuel Saving • Labor Saving • Space Saving

Steamcraft two compartment model accommodates 6 full size or 12 half pans. For kitchens serving up to 200 persons. Also ideal for use as an auxiliary warmer.



Steamcraft Cub counter model. Takes 3 full size or half pans. For use on counter top where space is at a premium. This model can be furnished with base.

Foods prepared the *Steam-Chef* or Steamcraft way taste better and look better—natural juices, flavor, color and texture are retained—vegetables and meats are full bodied and wholesome—don't have that "tired" look.

Steam-Chef cooking is a fast, efficient and economical method of quantity food preparation that provides the utmost in food flavor, and appearance.

Foods start to cook instantly—no waiting for water to boil—the moist heat penetrates quickly. Food placed in a *Steam-Chef* or Steamcraft can't burn—no boiling over or boiling dry—no watching or tending. Positive cooking controls save time and reduce fuel costs.

Steaming frequently in small lots is made easy—this reduces left-overs and assures freshly cooked, appetizing foods at all times.

More and more kitchens are utilizing the benefits and conveniences of *Steam-Chef* and Steamcraft cooking.

Steam-Chef and Steamcraft are available for direct steam, gas or electric operation, in sizes to fit individual requirements. For complete information write to:

THE CLEVELAND RANGE COMPANY

"The Steamer People"

3333-L LAKESIDE AVENUE • CLEVELAND 14, OHIO

mirror, mirror, on the wall...

Overweight can be a physical, social, and economic handicap . . . an unnecessary handicap which can be eliminated by intelligent choice of food and moderate exercise.

Medically supervised research on weight reduction shows active, overweight adults losing 1½ to 2 pounds per week on a diet of appetizing meals featuring a variety of foods which provide all nutrient needs except calories—and which also satisfy hunger. Persons on such diets maintained pep and sense of well-being, reported no hunger pangs . . . but shed excess pounds!

These diets contain approximately equal weights of protein, fat, and carbohydrate. Fat combined with protein in a meal delays hunger—for it reduces stomach motility and gastric juice secretion, promotes slower digestion, and makes possible a more gradual absorption of nutrients.

Foods included in these diets provide all essential nutrients in amounts recommended for adults. Only calories are in deficit. Dairy foods are an important feature of these meals because of their high proportion of nutrients in relation to the calories they provide. Their taste appeal and variety make the diet easy to follow until desired weight is lost.

Dietitians! Send for the convenient leaflet and diet instruction sheets containing menus for three full meals a day for an entire week. Diets at two moderately low calorie levels are included. These diet instructions will be useful even where a person may require a different calorie level for weight loss. For such individuals, the physician can suggest desired modification, retaining the basic diet plan.

These materials are yours on request —without cost or obligation. Simply fill out the coupon below and mail it today.

NATIONAL DAIRY COUNCIL D-3
A non-profit organization
111 N. Canal Street, Chicago 6, Illinois
Please send me, without cost or obligation, a pad of diet instruction sheets and leaflet on weight reduction.

NAME_____

PROFESSIONAL DESIGNATION_____

ADDRESS_____

_____

CITY_____ ZONE____ STATE_____

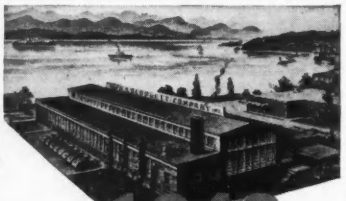
NATIONAL DAIRY COUNCIL
Since 1915 . . .
promoting better health through nutrition research and education.

the average meal ticket being 65 cents. Operational figures run: 52 per cent for food, 32 per cent for labor, and 10 per cent for miscellaneous overhead, allowing an average profit of 6 per cent. The kitchen was engineered to handle this multi-phased food operation and is divided into separate main course, salad-dessert, pastry-bread making, and dish-washing areas. Adequate storage space on the kitchen level puts everything needed for a day's meal schedule within a short distance of the preparation areas. A large basement storeroom permits large-order buying of canned foods and staples. Details of each phase of the operation are described, and menus at four price levels for banquets are given.

MSG. Most people in the food service industry are familiar with the name "monosodium glutamate" (MSG), but few know the facts about it. Many have heard it is a miracle seasoning which can add new flavor to foods. Does it do what is claimed? Is it safe? Is its use legitimate? The author outlines briefly the history of its use, giving credit for its development to the Japanese. In the U. S., four companies are now producing it. Although MSG has little flavor of its own, it "brings out" flavor in other foods. It is most effective in meats, seafoods, soups, chowders, and many vegetables. Fruits, sweet baked goods, dairy products, and cereals seem to be benefited little by MSG.

Menu Writing for Profit. Menu format, menu content, and pricing formula differ with the type of food service establishment, but there are general rules and basic information one can follow when writing a menu. The menu is the heart of the food service establishment and will determine the labor necessary, the purchasing, merchandising, preparation and service cycles of the business, and training of personnel. It is the key to volume, food cost, and labor cost. A checklist to follow in writing menus is given in this article which contains sections on: (a) customer appeal, (b) suitability to your location, clientele, and establishment, (c) cost balance, (d) tailoring the menu to the time of day, (e) the items to carry, and (f) aids in menu planning.

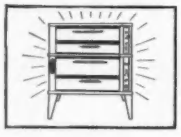
107 YEARS OF OVEN EXPERIENCE
GO INTO EVERY BLODGETT OVEN



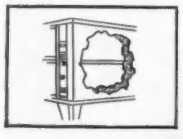
When you buy Blodgett, you benefit from the experience, research, engineering and know-how—developed from over a century of SPECIALIZATION IN BUILDING OVENS ONLY! For baking, roasting, and general oven cookery, Blodgett's built-in features give you MORE for your OVEN DOLLAR! Ask your dealer.

"Your Best Buy"
AN OVEN BY OVEN SPECIALISTS

BLODGETT *FEATURES*



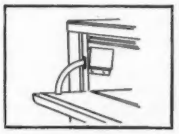
STREAMLINED APPEARANCE
Smart in lines. Rounded corners. Flush surfaces for easy cleaning.



HEAVIER INSULATION
4" of Fiberglas around the oven cuts fuel costs, keeps kitchen cooler.

BLODGETT *EXCLUSIVES*

COUNTER BALANCED DOORS
Sturdier, yet open with a flip of the fingers.



BATTLESHIP CONSTRUCTION
For extra durability. Body walls and frame welded into single rigid unit.

THE G. S. BLODGETT CO. INC.
50 LAKESIDE AVENUE BURLINGTON, VERMONT
In Canada, Garland-Blodgett, Ltd., 1272 Castlefield Ave. West, Toronto 10, Ontario

INSTITUTIONS

Vol. 36, February, 1955

*Vitalizing a suggestion system. V. W. Eimicke.—p. 6.
*Reveal results of experiments in infrared cookery. D. E. Lundberg.—p. 16.
*Food costs require daily attention to achieve control. L. W. Scott.—p. 17.
Tells danger of water contamination. W. H. Haskell.—p. 34.
*Britons track down their tea complaints.—p. 40.
*Hamburgers win spot as all-American choice. M. D. Johnson.—p. 48.
*Portion controlled meat. R. Kahn.—p. 141.
*Portion controlled meat adds menu variety—speeds service.—p. 142.
*How to keep foreign substances out of food.—p. 160.

Overhauling a Suggestion System. A Coney Island food service organization has "revitalized" its suggestion system with excellent results. In analyzing the old system, the company found that it was actually hard for employees to make suggestions; there were no suggestion forms; the suggestion box was not attractive; the way in which the system worked was not clear; there was no provision for maintaining anonymity of the "suggestor"; and the system was not "sold" to the employees. As a result, few developed any interest in making suggestions. To change the situation, the first-line supervisors gave their support to the creation of a new system and meetings were held to review the old plan and work out objectives of the new system. It was decided to limit the new program to workers. All suggestions are now submitted on a specially-designed form, with no restriction as to subject matter. Suggestions are reviewed by a committee twice a month, and all workers whose suggestions are accepted receive at least $10. In addition, an active advertising campaign publicizes the plan. During the first six months the new system has been in operation, more suggestions have been received than during the several years of the old plan.

Infrared Cookery. Results of experimental cookery with infrared methods point to a wider use of this technique. In the experiment reported in this article, a specially designed infrared "oven" equipped with four 5000-watt infrared bulbs was used in cooking ten different food items. The same products were then cooked in a standard oven. Comparison of the cooking times and the cooked items showed the infrared

Largest-Selling Brand of Coffee in the Institutional Field!

oven gave superior results. From 33 to 60 per cent was saved in actual cooking time. Also, the regulation oven required a preheating time of 26 min. to reach a temperature of 400°F., while the infrared oven required no preheating time. Foods used in the experiment were: haddock, frankfurter, meat balls, dinner roll, hamburger bun, casseroles, chicken pot pie, beef pot pie, hamburger, and bacon.

Daily Attention to Cost Controls. One of the most obvious, and also the most overlooked ways to keep food costs down lies in the problem of portion control. In making out menus, the food service supervisor should have portion specifications for every item served and copies of these should be posted wherever portions are served. The "big three" of the food control problem are: (a) improper pricing, (b) overproduction, and (c) theft. Pricing is one of the most difficult. Tradition, as evidenced by customers' protests, for instance, makes it hard to raise the price of a cup of coffee. Mark-up is another factor which is difficult in pricing. Uniform mark-up is impossible. To achieve an over-all satisfactory mark-up, the author suggests: (a) establishing a basic food cost percentage goal and (b) costing every menu in advance. A selling price should never be set without knowing at least the approximate cost of the item.

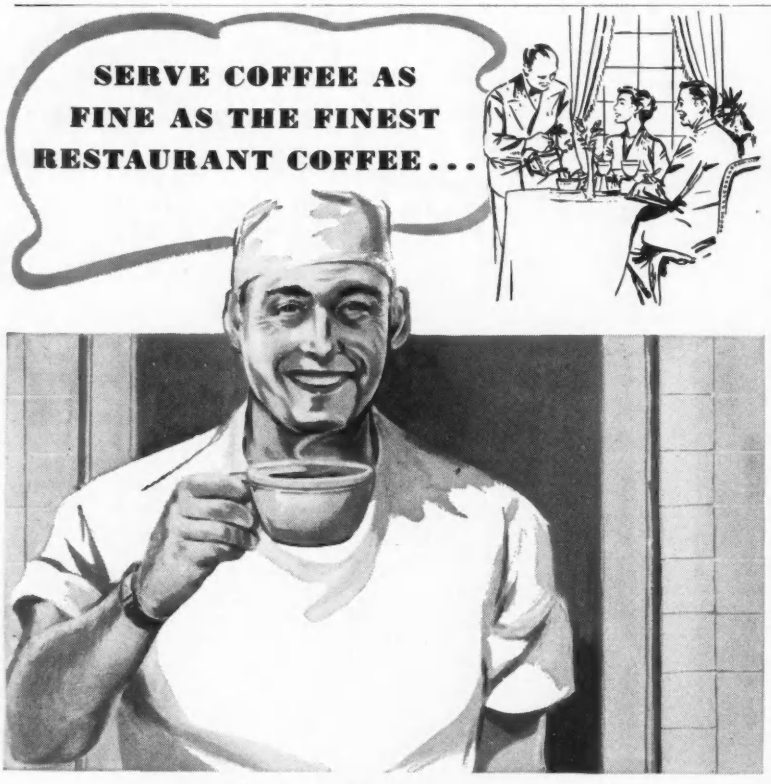
Complaints about Tea. From Britain comes a list of things that can be wrong with a cup of tea. In view of the increasing popularity of tea in the U.S., this tabulation of customers' complaints and their possible causes should be helpful to the food service operator.

Hamburgers. Few menu items are as popular as the hamburger, mainly because no other item can fill a meal requirement as easily and at such a low cost. The food service manager of the Chicago campus of the University of Illinois tells how the hamburger's popularity has set the pace of the food service. Hamburger is ordered from the dealer in patty form, separated by waxed paper, and is thus ready to place on the grill. Prior to rush hour, patties are seared on both sides, making sure neither side is thoroughly cooked through. Then they are placed in a pan with a little beef base, butter, and monosodium glutamate. The hamburgers are served from this pan, while others are grilled, assuring a continuous flow to the customer. This type of preparation also assures the patron a tasty, moist hamburger.

Portion Controlled Meat. Frozen meat cut to serve as it is needed and packaged ready to cook is a great help in food cost control. There is no difference in quality between blast-frozen and fresh meat. Buying meat in this way has many advantages. You can buy exactly what you want with no waste or trim. Cost control is easy because the meat is purchased per serving and the exact cost of a serving is known. It is simple to make and to follow specifications, and menu making is simplified and can be easily varied. Because the meat is cooked as needed, losses from overproduction are eliminated and labor is saved. This article gives tips in buying the meat from the purveyor and pointers on menu planning.

Fabricated Frozen Meats. Frozen "chops" with no bone, prepared by the packer from pork, beef, or veal, can provide variety to institutional menus. They are adaptable to all types of food service and are popular with patrons. In the processing operation, all tendons, gristle, and other extraneous tissues are trimmed to insure tenderness. The chops may be pan fried, deep-fat fried, or oven fried, with cooking times ranging from 3 to 10 min. Shaped, breaded, and frozen in uniform size, these chops are sold in four-, five-, and six-to-the-pound.

Foreign Substances in Foods. Analysis of cases of foreign substances in foods reveals that more than 80 per cent of the offending items are classified as: metal—tacks, nails, staples, pins, wire; glass; hair, string, rags, grease; insects and vermin; and wood chips. This article discusses the precautions that should be taken against foreign substances in food preparation, particularly in baking operations.



with *More Coffee Flavor*

There are many tastes to please in a hospital . . . nurses, patients, doctors, the administrative staff. In coffee *all* want *flavor*. Millions enjoy Continental Coffee because it has the *most* in flavor—delicious, winey-rich, full-bodied and unvaryingly fine.

So for "More Coffee Flavor" and better value for your hospital, see your Continental man *now!*

Continental Coffee

AMERICA'S LEADING COFFEE for RESTAURANTS, HOTELS AND INSTITUTIONS
CONTINENTAL COFFEE COMPANY CHICAGO • BROOKLYN • TOLEDO

In the Pacific Northwest it's ROYAL CORONA coffee
Seattle, Washington

THE MODERN HOSPITAL

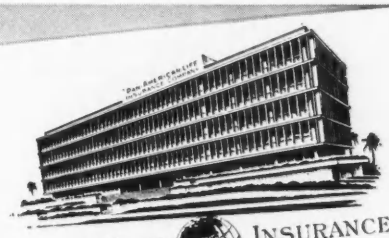
Vol. 84, January, 1955

*Good planning is a question of checking. E. A. Jones.—p. 110.

*Cut up the turkey to cut costs and labor.—p. 116.

Vol. 84, February, 1955

*Better food for mental patients. C. Bishop.—p. 110.



PAN-AMERICAN LIFE INSURANCE COMPANY
CRAWFORD H ELLIS, PRESIDENT — NEW ORLEANS U. S. A.

Libbey Glass,
Division of Owens-Illinois
Toledo 1, Ohio

Gentlemen:

Insurance companies, as you know, make good use of statistics, and we thought you might be interested in some figures we recently developed regarding our costs on the Libbey Heat Treated water glasses currently in use in our employees' cafeteria.

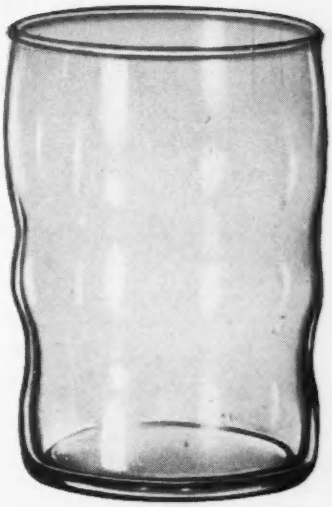
When we opened the cafeteria more than two years ago, we purchased sixty dozen of your number 610 water tumblers, which are used in the service of an average of 325 meals daily to our employees. After twenty-seven months of operation and more than 180,000 servings, we are still using the same water glasses with which we started, and have yet to buy the first replacement.

Our cost for glassware to date has been about three one-hundredths of a cent per serving, and the glasses are still being used. Careful planning and modern handling equipment play an important part in maintaining such a record, of course, but you can be sure that we are very much impressed with the service our Libbey glassware is giving us.

Cordially yours,

T. J. Bradshaw

Building Manager



Libbey HEAT-TREATED

Heat-Treated Tumbler
No. 610—9½ oz.

Reproduced here is a letter from T. J. Bradshaw, Building Manager for Pan-American Insurance Company, telling of their experience and satisfaction with Libbey Heat-Treated glasses.

Records prove low, low cost of Libbey Heat-Treated Glasses

Only "three one-hundredths of a cent per serving"
Pan-American Life Insurance Company, New Orleans, La., reports after 180,000 servings of Libbey Heat-Treated Glasses

Statistics are so commonplace with insurance companies, it takes mighty unusual ones to impress them.

But here's one insurance company that's "very much impressed." When the Pan-American Life Insurance Company opened its employees' cafeteria more than 2 years ago, it bought 60 dozen Libbey Heat-Treated water glasses. Now, after 27 months of operation . . . more than 180,000 servings, Pan-American still uses the original glasses and has yet to buy the first replacement!

And, they report, the amazingly low cost figure they experience with Libbey's Heat-Treated glasses is only *three one-hundredths of a cent per serving.*

Whether your operation is large or small, you'll find, like Pan-American Life Insurance Company, that it's just good business to standardize on Libbey Glassware service. And, for a slight additional charge, you can include the personal touch of your own crest, monogram or trade mark.

For details, contact your Libbey supply dealer. Or write Libbey Glass, Division of Owens-Illinois, Toledo 1, Ohio.

LIBBEY HEAT-TREATED GLASSWARE
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES • TOLEDO 1, OHIO

Good Planning for Kitchen Operation. This article concludes a series. In it is an analysis of space and equipment requirements. A check list of pertinent questions serves as a guide to determine the kind and size of equipment needed in the main kitchen. Questions are asked concerning these areas of the kitchen: receiving; day storage; refrigerated storage; meat preparation unit; cooking and baking unit; and pot-washing. This check-list system is a good way to learn whether your dietary department is really well planned. Another good system is to plan a sample menu and follow its preparation through the kitchen, drawing out the traffic lines. In this way, you can check the pieces of equipment and their use.

Cut-Up Turkey Cuts Costs. At St. Agnes Hospital, Fond du Lac, Wisconsin, cut-up turkey is an every-day meat instead of an occasional treat. Turkey roasted in cut-up form is easier to prepare, yields more cooked meat, saves oven space, and cuts the cooking time in half. The turkeys cooked in this way lend themselves well to machine-slicing of the boneless cooked breasts and thighs, and the flavor and appearance of the turkey is improved. This article describes the procedure used in preparing the turkeys for the oven.

Better Food for Mental Patients. In 1948, the New York State Department of Mental Hygiene established a Food Service Training School for present and prospective food service employees. The program of the school is described.

Serve coffee by the pot

FOR BIGGER PROFITS

All stainless steel vacuum pots
Keep contents piping hot for hours
One-piece seamless drawn liners
Silver soldered joints No replating

3012-1V Wide necked—easy to clean. Stainless steel seamless drawn liner and outside shell. Gadroon border,* in 10 and 20 oz. sizes.

3012-VA Double wall construction, all stainless steel inside and out. Easy to clean, corrosion-proof. No replating. Individual 10 oz. size.

Sturdy insulated handles — seamless drawn bodies —heavy gauge stainless steel throughout — sanitary perfect pour spouts — double thick extra strong hinges—welded spouts and bases—lustrous platinum finish with attractive border decorations* to supplement the finest china, glass and silver service.

No breakage • Easy-to-clean
Non-porous • Chip proof • No replating
No polishing expense
A lifetime investment

Write for catalogues: LEGION UTENSILS CO.
2109 40th Ave., Long Island City 1, N. Y.

Branch offices:
21 East Van Buren Street, Chicago 5, Illinois
420 Market Street, San Francisco 11, California

*SCAVULLO PAT

LEGION UTENSILS CO.

PIONEERS IN STAINLESS STEEL

PERSONNEL JOURNAL

Vol. 33, February, 1955

*An industrial psychiatrist looks at employee communications. A. McLean.—p. 340.

Employee Communications. An industrial psychiatrist finds that employee communication is one of the most important factors in the success of industry—and, in personnel relationships. Actually the real problem is to make a man feel as important as he really is—that is, by making him as important as he is capable of being. Good communication resulting in precise understanding engenders healthy attitudes and increases a man's desire to work, to improve, and to do his best work. Misunderstanding and misinterpretation often distort the content of formal communication and result in a feeling of suspicion against management. It is easier to stimulate feelings of opposition and destruction than of tolerance and cooperation. Another detriment to good communication is contradictory communication, i.e., one policy that is contrary to another. This often can be found in house organs. Overcommunication can often be harmful for it creates avoidable anxiety. Decisions other than the final ones should not be passed down through the management to employees, but should be held until the final decision is made. This is also true when only half of a story is told.

RESTAURANT MANAGEMENT

Vol. 76, January, 1955

*Seven trends to watch in 1955. L. Nejelski.—p. 30.
*How to achieve more harmonious labor relations. G. P. Schmidt.—p. 34.
*Materials that make for better flooring. C. R. Whitmer, Jr.—p. 40.
*How 705 restaurants buy their meats. P. Pompilio. —p. 49.

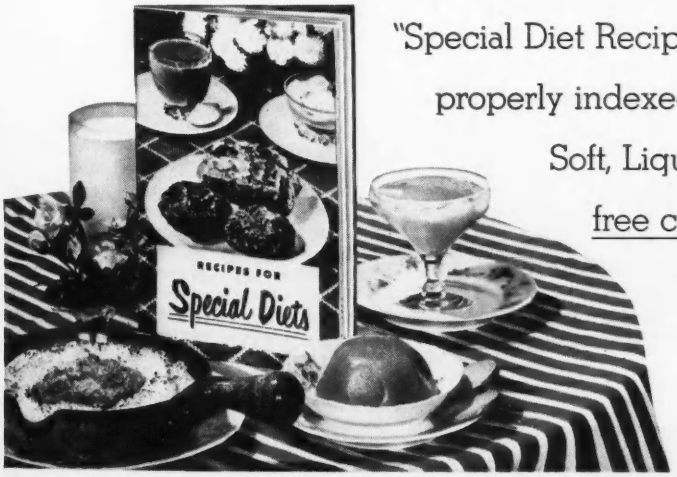
Trends to Watch. Kitchens will be smaller because more preprocessed foods will be used. Kitchens will need more storage and table space. More restaurants will go into the preparation and freezing of food during slack hours. Development of fast thawing and reheating equipment will receive serious attention. Cost accounting will become better standardized. Competition has forced quality and cost controls. In determining selling price, not only should food be precosted in menus but also the cost of labor should be considered. Labor-saving equipment will increase.

Labor Relations. Peace on earth does not happen automatically. There is moral effort behind good-will. To achieve harmony, the employer and employees must have integrity and good-will toward each other. An employer wins the respect of employees by avoiding personal selfishness and an overmastering ambition to attain power. There must be mutual respect of labor for management and of management for labor.

How to turn the tables on a special diet "delinquent"

If a special diet patient gets upset about your specifications, he's probably bored with menu-monotony. You can help right the situation by introducing a greater variety of foods—more meal appeal. Gerber offers 4 Cereals, over 60 Strained and Junior (minced) Foods to perk up ailing appetites. Gerber's Strained Foods are kind to delicate digestive systems because they're smooth in texture, low in crude fiber, blandly seasoned. True flavors, and tempting colors add to appetite interest.

GOOD SUBJECT MATTER FOR YOU AND YOUR PATIENTS



More palatable, "full course" menus are possible with Gerber's "Special Diet Recipes"—over 96 easy-to-fix dishes, properly indexed for Bland, Soft, Mechanically Soft, Liquid and Low-Residue diets. For free copies, write on your letterhead to Dept. 234-5, Fremont, Mich.

Gerber®

CEREALS, STRAINED & JUNIOR FOODS

Flooring Materials. Resilient flooring has a number of qualities worth considering. It is easily installed and easily cleaned. It is more comfortable to walk on and is quiet underfoot. It is permanent in pattern and color and gives years of service. *Linoleum* of heavy gauge is long-wearing, and seams may be put together tightly to prevent lodging of dirt. *Plastic flooring* in sheet form has resistance to abrasion and wear. It is greaseproof. *Asphalt tile* is economical and may be obtained resistant to grease if so specified. *Rubber tile* is durable, resistant to wear, reduces noises underfoot, but is not recommended for areas subject to grease and oils. *Plastic tile* is made of high quality vinyl material. It is a luxury flooring recommended for interiors where it is desirable to have the floor match the decorative treatment. It is greaseproof and resistant to most detergents or alkaline substances. *Cork tile* may be used where beauty is desired. It is not recommended for areas where dirt and heavy traffic are found. It is not grease-resistant. *Linoleum tile* is linoleum cut into squares to facilitate installation. It is recommended for suspended floors only.

Meat Buying Survey. Operators of 705 restaurants in 47 states reported their meat-buying habits as follows:

Primal cuts	62% or 438 restaurants
Prefabricated cuts	58% or 406 restaurants
Carcass	24% or 171 restaurants
Canned	15% or 107 restaurants

Only 26 per cent bought primal cuts only, whereas 22 per cent purchased prefabricated cuts exclusively; 6 per cent purchased only carcass meat.

Solved!
YOUR BIGGEST REFRIGERATOR PROBLEM!
The KOCH "Food File"
will handle foods that can't be stacked
New convenience —
New-found extra space . . .
found only in Koch reach-in refrigerators.
• "Food-File" available in all sections of Koch institutional refrigerators.
• Multiplies food storage capacity 4 to 6 times.
• Each level will accommodate one 18" x 26" tray or two 14" x 18" cafeteria-size trays.
• You can insert or remove food by the dish or by the complete tray.
Find out the complete story —
See your preferred dealer—or write
SINCE 1883
KOCH refrigerators, inc.
NORTH KANSAS CITY 16, MO.

WESTERN HOTEL AND RESTAURANT REPORTER

Vol. 81, December, 1954
*Hard surfaces for busy floors.—p. 13.
*Cellophane sharpens hamburger sales.—p. 15.

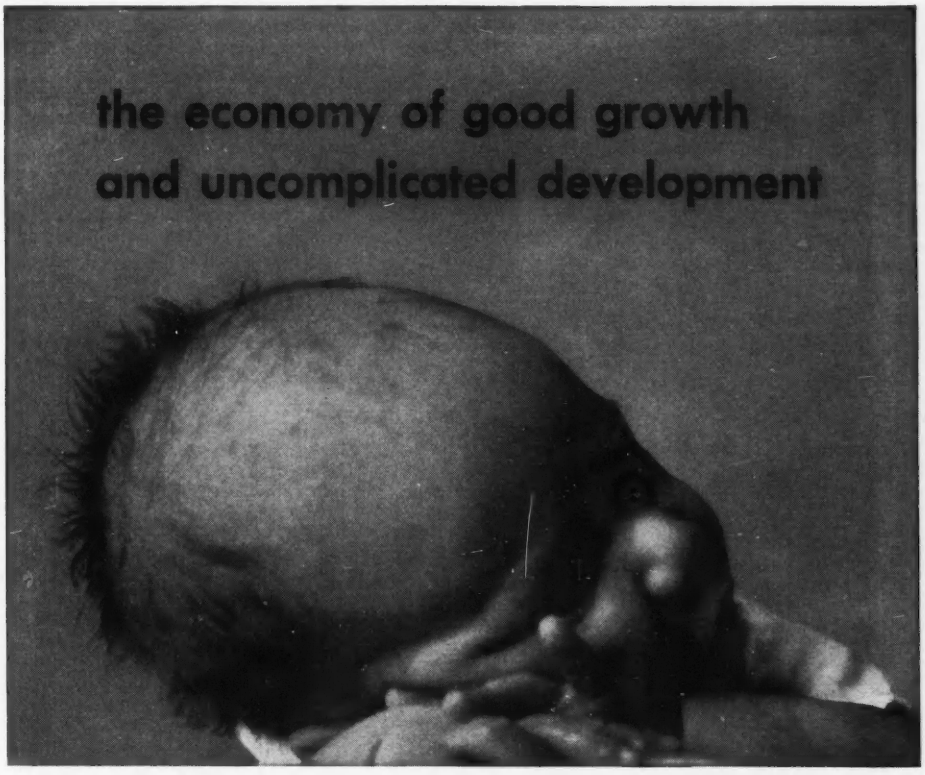
Floor Surfaces. Today there are many floor surfaces specially created for the busy institutional kitchen and dining room. *Asphalt tile* is most economical and resistant to moisture, but is softened by some waxes. *Linoleum* is available in many patterns, colors, and sizes, but must be waxed after each washing. *Vinyl plastic* is outstandingly durable and has a non-porous surface. *Vinyl asbestos tile* may be installed over concrete or below grade as it resists moisture. *Cork* is sound-absorbent and non-slipping. *Rubber tile* appears in many colors, is soft underfoot, and requires waxing.

Cellophane Aids Hamburger Sales. A drive-in in Indiana reports a great increase in hamburger sales since a cellophane wrapping was started. Cellophane is also used for tenderloin sandwiches, liners for the chicken basket, and to separate ham slices and steaks while being refrigerated. The main advantages of cellophane are that it is greaseproof and yet allows steamy moist vapor to escape so that hot food does not become soggy.

WHAT'S NEW IN HOME ECONOMICS

Vol. 19, February, 1955
*How to keep nutrition high—calories low. F. L. Beinert.—p. 72.

Good Nutrition with Low Calories. The rewards of correct weight are many, i.e., better health, longer life, and more attractive appearance. Often, though, people who want to reduce start "fad" diets which do not often last long, are troublesome, and in the end do nothing to control weight. Some of these "fad" diets are liquid diets and seven-, fourteen-, and eighteen-day diets which are not nutritionally adequate and are, in many cases, harmful to good health. The most sensible type of diet is one based on just good nutritious food. An added advantage of this type of diet is its social aspect. It is often annoying when dining out to refuse food because "it isn't on my diet." A diet with a wide variety of food will never cause this problem. A nutritionally adequate reducing diet, as well as a normal diet, includes: an abundance of protein foods for building, renewing, and maintenance of body tissues; a plentiful supply of essential vitamins and minerals; and enough good-quality carbohydrate and fat to fit into the caloric restriction.



SIMILAC POWDER—*physiologic food during the first year of life*—

To assure sound growth and reduce many of the complications commonly encountered in the first year of life, the full, balanced Similac formula provides: fat, protein and carbohydrate closely approximating the content of human breast milk in quality and quantity; a full complement of known essential vitamins in adequate amounts; an adjusted mineral content; a soft, fluid curd with zero tension, assuring rapid and easy digestion.

SIMILAC POWDER—*stable in price . . . an economy in feeding*—

With food costs at or near an all-time high, the price of Similac has remained relatively constant since 1923. Similac with its complete modification and added vitamins is virtually the same in price as vitamin-supplemented whole-milk feeding – and in many instances actually affords greater economy.

SIMILAC *powder*

There is no closer equivalent to the milk of healthy, well-nourished mothers

SUPPLIED:
Tins of 1 lb., with measuring cup. Similac is also available as concentrated Liquid in tins of 13 fl. oz.

M & R LABORATORIES, *Columbus 16, Ohio*

NOW . . . a
Redicut
QUALITY
VEAL
STEAK
ONLY
10¢
per serving

Here's VALUE in pennies that means real savings in dollars for you! Imagine a fresh-frozen 2 oz. quality Veal Cutlet—prepared under strict government inspection—and only 10¢ per portion. This is just one of the many outstanding values in a line that is specially prepared and specially priced for limited budgets by Colonial Beef—pioneers and leaders in portion control. For more than 60 years, Colonial Beef has supplied the finest Hotels, Clubs, Restaurants and Institutions in the East. Government Inspection, plus Colonial Integrity, are your double assurance of quality.

Call your local frozen food distributor today and ask him for a box of Colonial Beef "Rediculs"—they are head and shoulders above competitive brands in quality, looks, taste—and price!

Colonial Beef Co.
401-09 N. FRANKLIN ST.,
PHILADELPHIA 23, PA.

FREE!
This new booklet "How to Cut Food Costs" not only has much important information that can be of help to you—but also is a complete price list of the Colonial portion-control line. For your FREE copy fill in the coupon below and mail today.

Dept. T

NAME_____TITLE_____
ESTABLISHMENT_____
ADDRESS_____
CITY_____ZONE_____STATE_____

News Notes

Health Careers Campaign. Late in February, the long-awaited *Health Careers Guidebook*, prepared by the National Health Council, was released. A 160-page text-and-picture documentary, the *Guidebook* covers 156 different occupations in the health field, from hospital maintenance to creative, scientific research. Published by the Council and supported in the public interest by one of its sustaining members, the Equitable Life Assurance Society of the United States, the *Guidebook* is the first step in the Council's new Health Career Horizons Project. Designed primarily as a counseling tool, the *Guidebook* has been slanted to help the individual teen-age boy or girl in making his selection of an occupation.

A second brochure has also been issued under the title, *Partners for Health*. This is a briefer edition of the *Guidebook* presenting the same general introductory view of the field as the *Guidebook* and is designed for supplementary school and community use.

Four pages of the *Guidebook* are devoted to "Dietetic and Nutritional Services," with career outlines for the following: dietitian, nutritionist, food service supervisor, food service clerical worker, and food service worker. The American Dietetic Association, through its Public Relations Director, Thelma Pollen, cooperated with the National Health Council in the preparation of this section.

Copies of both the *Guidebook* and *Partners for Health* were formally issued at the meeting of the National Association of Secondary School Principals in Atlantic City on February 21. Since these publications are intended primarily for use in secondary schools, the invitation from that Association to issue the book at its meeting were felt to be most appropriate. The *Guidebook* and *Partners for Health* are now being distributed without charge to each of the nation's more than 29,000 secondary schools and junior colleges; through this nationwide distribution, the information will reach 7½ million teen-age students.

Data on Amino Acids in Foods. The Food and Nutrition Board of the National Research Council has appointed a standing Committee on Amino Acids to evaluate the possible usefulness of amino acids as food additives. However, there is a need for more data on the amino acid content of typical foods in order to determine whether the U.S. dietary is adequate in certain amino acids. When the committee has acquired an adequate tabulation of amino acids supplied by typical diets, comparison can be made with presently accepted recommended allowances. The committee will also undertake to study the efficacy of adding amino acids to the diets of animals and human beings in areas where deficiencies have been surmised.

In an effort to cooperate with this committee, the Human Nutrition Research Branch, USDA, has assembled and is continuing to collect available data. Preliminary findings indicate a shortage of analytical values for cystine and tyrosine in all foods and for all amino acids in such foods as flour, cereals, potatoes, baker's yeast, fresh processed vegetables, and infant foods. Laboratories having original data are encouraged to communicate with Dr. Esther Phipard, Human Nutrition Research Branch, USDA. Expression of values should be designated in terms of milligrams of amino acid per 100 gm. food, together with total nitrogen content of the food.

Dr. C. A. Elvehjem, University of Wisconsin, is serving as chairman of the Committee, which also includes: J. S. Andrews, D. Mark Hegsted, Esther Phipard, H. H. Williams, and J. N. Williams, Jr.

Plentiful Foods MONTHLY LIST

Pork will be the featured "plentiful food" during the month of April, according to an announcement from the U.S.-D.A. The entire list will include:

Protein foods

Beef
Eggs
Haddock
Halibut
Milk and dairy products
Pork
Shrimp
Tuna—canned

Other foods

Beans, snap—canned
Corn, sweet—canned
Grapefruit—fresh and processed
Lard
Oranges—fresh and processed
Prunes, small
Raisins
Rice
Vegetable fats and oil

Members Are Honored. On February 19, Mary deGarmo Bryan, Past-President of A.D.A., was one of fifty-eight alumni of Washington University, St. Louis, to be honored in recognition of outstanding achievements and services which have reflected honor upon the University. The citations were made during the University's special convocation marking the beginning of its second century of education and service to the St. Louis community.

On February 1 and 3, Adelia Beeuwkes, Associate Professor, School of Public Health, University of Michigan, appeared as a specially-invited guest on the NBC-TV show *Home*, of which Arlene Frances is the star. This was a

Sparkling clarity . . . refreshing "true" flavor!

Fine to look at, even better to taste! That's what guests everywhere are saying about Le Gout Gelatin Desserts. Flavor is so uniformly true that each of these Le Gout Desserts tastes as though it were just made from fresh, fully-ripened fruit. Preparation is simple, results uniformly fine every time! And, most important, too, these delicious desserts by Le Gout remain firm under long standing, yet they retain all of their original tenderness, sparkling clarity, delightful flavor. That means much to you whenever you have a considerable time lapse between preparation and serving periods! That is what makes these products equally fine for use either as delicious desserts or in your salads. Ask the Le Gout Man or your jobber for a demonstration.

GELATIN DESSERTS

LE GOUT FEARN FOODS

EIGHT FAVORITE FLAVORS FOR YOU—
Le Gout Gelatin Desserts come in all these flavors to give you the complete variety you need: Cherry, Raspberry, Strawberry, Grape, Orange, Lemon and Lime and Loganberry.

LE GOUT PUDDINGS IN FOUR FLAVORS—
Le Gout also brings you rich, tender-textured, easily made puddings in Sweet Chocolate, Bittersweet Chocolate, Vanilla and Butterscotch flavors.

FREE SAMPLES and RECIPE CARDS. Write today, see how to easily make delicious desserts and salads.

ANOTHER QUALITY PRODUCT OF *Fearn Foods Inc.*, FRANKLIN PARK, ILLINOIS

repeat invitation, Miss Beeuwkes having appeared on this program during the week of the 37th A.D.A. Annual Meeting last fall. The topic of her recent telecasts concerned food fads as they affect weight reducing programs.

Scholarships and Loans. The School of Public Health of the University of California, Berkeley, is offering a $2400 scholarship in public health nutrition. Requirements for admission into the school are three years' working experience in a field involving nutrition; a dietetic internship or experience as a dietitian may be included in this experience. Applicants should write to Charles E. Smith, Dean, School of Public Health, University of California, Berkeley—Attention: Ruth L. Huenemann, and more information about the scholarship will be forwarded.

Data on Fruits and Vegetables. A third revised edition of "Guide to Average Monthly Availability of 102 Fresh Fruits and Vegetables" has been compiled by the United Fresh Fruit & Vegetable Association. In it, monthly availability of each commodity, plus the average annual supply in the U.S., is tabulated. Data are based on such sources as car-lot equivalent unloads at important cities; shipments by rail and truck; imports; crop reports; USDA figures on per capita consumption; and so on. Calculations were based, so far as possible, on the five years, 1949–53. Copies of the chart are available from the above Association, 777 14th Street, N.W., Washington 5, D. C., for 25 cents each.

Spice Information. In February, the National Restaurant Association, in cooperation with the American Spice Trade Association, released its Technical Bulletin No. 190 on "Spices." This twelve-page compilation lists origins, descriptions, and major uses of forty-six different seasoning items. Also included is advice on purchasing and handling

SPECIAL SUMMER COURSES AND WORKSHOPS

Douglass College (formerly New Jersey College for Women, Rutgers University

SUBJECT: *Workshop on the School Lunch Program*
DATES: June 27–July 1
CREDIT: 1 hr.
DESCRIPTION: Will explore need, status, and future of the school lunch program in elementary and secondary schools. Special emphasis on techniques of management and to nutrition education.

SUBJECT: *Nutrition Education*
DATES: July 27–July 15
CREDIT: 3 hr.
DESCRIPTION: Study of present-day problems in nutrition education. Methods and techniques used in teaching nutrition. Opportunity for study of individual problems.

SUBJECT: *Adult Education in Home Economics and Family Life*
DATES: July 27–July 15
CREDIT: 3 hr.
DESCRIPTION: Procedures in teaching adults; planning programs; cooperating with educational agencies.

Florida State University

SUBJECT: *Introduction to School Lunch Management*
DATES: June 20–July 7
CREDIT: 3 hr.
DESCRIPTION: A study of procedures by which school lunch may become an integral part of the school's educational program; analysis of problems of management.

SUBJECT: *Food Control*
DATES: July 7–29
CREDIT: 2 hr.
DESCRIPTION: Food control and storeroom management in institutions.

SUBJECT: *Directed Individual Study Modified*
DATES: July 7–29; also August 1–5
CREDIT: 1 hr.
DESCRIPTION: Enables student to earn 3 hr. credit from Food Control course above.

Michigan State College

SUBJECT: *Workshop in Supervision and Cost Control*
DATES: July 11–22
CREDIT: 3 hr.
DESCRIPTION: Consideration of basic problems of supervision and cost control with emphasis on need for adapting procedures to current trends. Use of accounting techniques, improved buying procedures and standardization, production methods and portion control will form basis for solving problems of food service director.

New Mexico College of Agriculture and Mechanical Arts

SUBJECT: *Community Nutrition Problems*
DATES: June 13–25
CREDIT: 3 hr.
DESCRIPTION: Open to school lunch workers the first week (no credit) and to graduate students for full course (3 hr. credit). Organization and management of school lunchrooms.

New York State College of Home Economics at Cornell University

SUBJECT: *Current Developments in Institution Food Administration*
DATES: July 5–23
DESCRIPTION: Planned for good administrators and dietitians interested in bringing themselves up-to-date. Prerequisites: undergraduate preparation in institution management and/or dietetics and experience in food administration. Instructors: Fern Gleiser, A.D.A. President and Professor, School of Business, University of Chicago, and Dr. Karla Longrée, Director of Research in Institution Management, Cornell University.

SUBJECT: *Recent Findings in Nutrition*
DATES: July 5–23—also July 25–August 13
CREDIT: 1 hr.
DESCRIPTION: Designed to serve as refresher course in nutrition.

SUBJECT: *Quantity Food Preparation*
DATES: July 5–23—also July 25–August 13
DESCRIPTION: Emphasis on new techniques and new products. Either three-week course may be taken independently or the student may take both.

SUBJECT: *Home Freezing of Foods and Their Use*
DATES: July 5–August 13
CREDIT: 2 hr.
DESCRIPTION: Freezing and serving of meat, poultry, fruits, vegetables, juices, and prepared, precooked foods. Instructor: Dr. Faith Fenton, Cornell University.

Prairie View A. & M. College

SUBJECT: *Workshop in Nutrition*
DATES: June 6–July 17
CREDIT: 3 hr.

Syracuse University (in cooperation with N.Y. State Department of Health)

SUBJECT: *Community Nutrition Institute*
DATES: June 20–July 2
CREDIT: 3 hr. (optional)
DESCRIPTION: Diet in cardiac disorders and recent findings in nutritional research, normal physiology of the blood and treatment of certain blood dyscrasias. Field work with nutritionist, visiting homes.

University of Connecticut, Hartford Branch

SUBJECT: *Foods and Nutrition*
DATES: July 4–15
CREDIT: 2 hr.
DESCRIPTION: Designed for school lunch managers. Will provide opportunity to work on problems arising from actual work situations. Emphasis on accounting and sanitation, including techniques of teaching food service personnel.

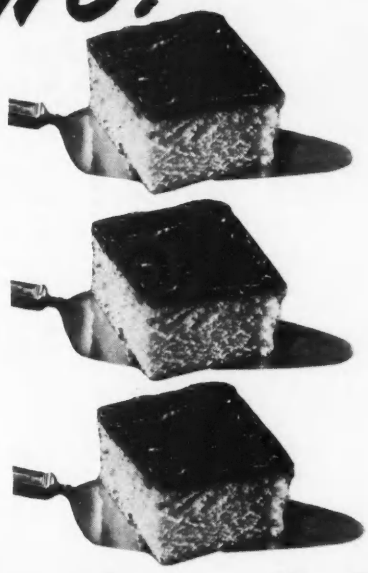
University of Minnesota

SUBJECT: *Workshop in Applied Nutrition*
DATES: June 13–24
CREDIT: 3 cr.
DESCRIPTION: Recent advances in nutrition and their application to the problems of schools and public welfare agencies; use of new materials and techniques; recent publications and audio-visual materials; field trips.

University of Wisconsin

SUBJECT: *Evaluation of Current Nutrition Concepts*
DATES: July 5–29
CREDIT: 2 hr.
DESCRIPTION: Course is designed to teach facts in an effort to combat misconceptions and fads.

Compare!



.....PORTION CONTROL

.....COST

.....QUALITY

...and you'll choose Downyflake every time!

For a third of a century, America's finest institutions have been finding Downyflake Fully Prepared Baking Mixes superior in every department:

PORTION CONTROL . . . Downyflake helps you budget and plan your menu accurately and with full confidence.Downyflake is the one and only ingredient you need keep track of. Eliminates cost uncertainty in connection with making your own mix. With Downyflake you know your costs in advance—to the split penny.

COST . . . for its superior quality, you can't buy better than Downyflake. The simple "just add water, mix and bake" operation is an enormous saving in labor cost of food preparation. Enables your bakers to produce more, in greater variety . . . and have more time for finishing.

QUALITY . . . Tried, proven, dependable. World pioneer in prepared baking mixes, Downyflake maintains its leadership through continuous scientific research and improvement . . . through skillful selection and blending of the finest ingredients money can buy.

Compare Downyflake! Prove by performance by sending for free sample today. Quality speaks with greatest eloquence!

5 SUPERIOR QUALITY BAKING MIXES
• *White Cake* • *Yellow Cake* • *Spice Cake*
Devils Food Cake • *Gingerbread*

Downyflake BAKING MIX DIVISION
DOUGHNUT CORPORATION OF AMERICA
45 WEST 36TH ST., NEW YORK 18, N. Y.

DOWNYFLAKE BAKING MIX DIV. JADA 4
Doughnut Corporation of America
45 West 36th St., New York 18, N. Y.
Kindly send me a sample of ..... Cake Mix.
☐ "Variety Downyflake Cakes" Folder
☐ Wall Chart "Baking Helps by Downyflake"
Name.....
Firm or Institution.....
Address.....
City.....Zone.....State.....

FOR THE
SODIUM
RESTRICTED
DIET

Cellu Canned Vegetables
and Vegetable Purees.
Packed Without Sugar,
Salt or Other Seasoning.

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

18 Popular Vegetables
and Purees Available

For cardiac patients, and others on sodium-restricted and salt-restricted diets. Cellu Canned Vegetables and Cellu Purees are packed without any added seasoning—condiments are easily added if conditions permit. Use Cellu Canned Vegetables and Purees to add variety to restricted diets . . . Corn, Asparagus Spears, Peas, String Beans, Pureed String Beans, Carrots, and Peas, and ten other favorites to choose from. Food values printed on the label for convenience in planning diet meals.

Send for FREE CATALOG of Cellu Dietary Foods

PURPOSEFULLY PREPARED

CELLU *Dietary Foods*

CHICAGO DIETETIC SUPPLY HOUSE Inc.
1750 West Van Buren Street Chicago 12, Illinois

CELLU
K-SALT
(LOW SODIUM)

Adds an appetizing salty tang to foods without adding to sodium intake. In handy shaker top container.

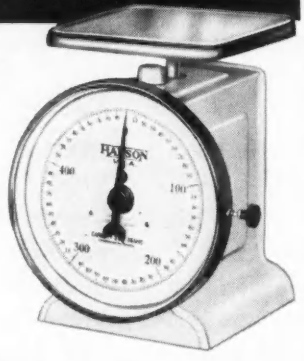
2 HANSON SCALES

that work together
in restricted diets and weight control.

DIETETIC SCALE, standard with the medical profession for controlled diets. Rotating dial eliminates computation as each item of food is added on the serving plate. Capacity 500 grams by grams. Stainless Steel platform, white enamel body, easy to keep clean.

Model 1411 (illst.) has glass protected dial, price **$15.00.**

Model 1440 enamel dial, price.....**$10.00**



Weighmaster the personal scale, dependable for checking gain or loss in weight under medical supervision. Graduations are easy to read. The Weighmaster is precision built and triple tested for accuracy.

Available in seven bathroom colors and all chrome.
Prices **$7.95** for colors, **$10.95** for all chrome.
(Far west 50c higher)

See your supply house or local drug store

HANSON SCALE CO. (Est. 1888) **Northbrook, Illinois**

spices in bulk feeding preparations. For each spice, data on measuring, i.e., number of teaspoons 1 oz. yields, is also provided. The center spread of the folder is devoted to suggested uses of seasonings for: appetizers, soups, meats, fish, stuffings, vegetables, sauces, cheese, salads, stewed fruits, sweet doughs, pies, cakes, puddings, frostings, and beverages. Copies of this pamphlet may be obtained free from the Information Bureau, American Spice Trade Association, 350 Fifth Avenue, New York 1.

CARE Book Fund. CARE has developed a book program which aims at providing the latest scientific and technical books to institutions abroad in order to help other countries raise their health standards. A special appeal for books on nutrition and foods has been made for nursing schools and public health schools. Other institutions, such as medical schools, libraries, agricultural schools, and research institutes are all seeking CARE's aid in procuring textbooks. Under the CARE book program, books are sent in shipments of $200 and more, but any donation is acceptable and welcome since contributions are combined.

CARE cites the need of the Nursing Department, National Institute of Public Health, Tokyo, in pointing out the help that is sought. Even though the Occupation Forces provided some books for distribution in Japan, few are available to teachers and students. The National Institute trains public health workers for the whole country and must have up-to-date information on methods and techniques to do an adequate job.

Donations and contributions for the book program should be sent to the CARE Book Prgrams, 660 First Avenue, New York 16.

Workshop on Nutrition Education in Nursing. "Nutrition Education in the Basic Nursing Curriculum" was the subject of a workshop sponsored jointly by the Minnesota Dietetic Association, the Minnesota League for Nursing, and the Minnesota Department of Health. The two-day course was held at the University of Minnesota Center for Continuation Study, Minneapolis, January 21 and 22, 1955.

The 116 registrants represented every school of nursing in the state, all colleges offering courses in nutrition for nurses, and the public health agencies. Under the leadership of Henderika Rynbergen, Associate Professor of Science, Cornell University-New York School of Nursing, who was consultant for the workshop, dietitians, nutritionists, and nurses considered various aspects of nutrition in the basic nursing curriculum. The specific topics discussed were: (a) What does the professional nurse need to know to give effective nutrition care? (b) How may nursing students be motivated to see nutrition as part of total patient care? (c) How may we integrate nutrition theory and clinical experience into the total nursing curriculum?

The participants were in accord that the workshop was a profitable experience. Competent leadership, the opportunity to discuss common problems, and group

Now holds standard #200, 12"x20" pans!

THE all-new TOASTMASTER DE LUXE HOT-FOOD SERVER

Holds cooked foods at the peak of perfection for hours!

New ready-reference instruction tray shows recommended temperature and humidity settings.

New "Hot" and "Cold" indicator . . . can be set to show when food is ready to serve.

New cool, finger-touch, recessed Bakelite handles.

New easy-to-use humidity regulator provides exact moisture control for each drawer.

New recessed thermostat . . . signal light indicates when unit is in use.

3-Drawer Model $375.00†

2-drawer De Luxe Model $275.00†

4-Drawer De Luxe Model $435.00†

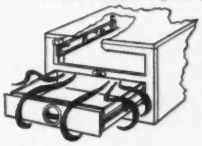
THE MOST PROFITABLE UNIT OF ITS KIND!

Now you can safely cook ahead to meet peak demands.

Now cooked foods can be transferred in standard-size pans.

Now you can eliminate food losses caused by shrinkage, drying out and loss of flavor.

Drawers open all the way, measure 5¼" deep x 22½" long x 13½" wide, to accommodate #200 pans.



Drawers, drawer tops and roller channels come out completely for easy cleaning. Self-locking latch.

Unique six-sided air circulation around drawers keeps food uniformly moist or crisp as desired.

Hurry!
Trade-in Offer on new Powermatic Toaster expires April 30!
SEE US AT THE NRA CONVENTION, BOOTHS 753-6, CHICAGO, MAY 10-13

†Prices slightly higher in Pacific Coast states.

TOASTMASTER DE LUXE HOT-FOOD SERVER

"Toastmaster" is a registered trademark of McGraw Electric Company, makers of "Toastmaster" Toasters, "Toastmaster" Waffle Bakers, "Toastmaster" Hot-Food Servers, and other "Toastmaster" Products. Copr. 1954. Toastmaster Products Division, McGraw Electric Company, Elgin, Illinois.

work were the real values of the workshop. It was agreed that plans should be made to assure continuing joint study to improve the nutrition education of the nursing student.

A report of the workshop is being prepared, and when completed will be available for distribution from the Minnesota Department of Health, University Campus, Minneapolis 14, Minnesota.

Conference for Small Hospitals. On February 8, 9, and 10, the Second Food Service Conference for Alabama Hospitals and Nursing Homes was held at the University of Alabama, Tuscaloosa. Sponsoring organizations of the Conference, which had a theme of "New Ideas in the Field of Food for the Patient," were: Alabama Dietetic Association, Alabama Hospital Association, Alabama Department of Public Health, and the Association of Nursing Homes. Serving as special consultant for the Conference was Isola D. Robinson, Dietetics Specialist, American Hospital Association.

The three-day meeting opened with a discussion on "What's Back of Food for the Patient," which was led by Dr. Bessie Davey, Head, Department of Foods and Nutrition, University of Alabama. This presentation was followed by a buzz-session program on "Menu Planning."

The third session of the meeting was on the topic, "From Market to Store Room." For this, Elma Benton, Chief Dietitian, VA Hospital, Birmingham, served as leader.

The second afternoon was devoted to the problems of administrators, with those attending divided into two groups. One group discussed the topics of "Modified Diets—For the Patient" under the leadership of Dr. E. Neige Todhunter, and "Kitchen Layouts and Remodeling," under the guidance of Kathleen Stitt, graduate student, University of Alabama. The second group was concerned first with "From Kitchen to Patient," and later with the problems of "Feeding the Older Age Group."

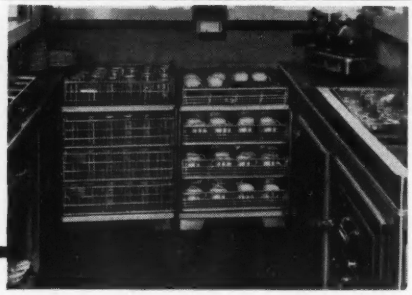
On the third day, the morning's topic was "Managing Ourselves, Personnel, Time, Money," which was presented first by Burton R. Morley, School of Commerce, University of Alabama, followed by Isola D. Robinson. Certificates were presented to participants at the end of this session.

1955 National Health Forum. The theme of the 1955 National Health Forum, held in New York City, March 23 and 24, was "Forecasting America's Health." The annual Forum helps professional people and the public look at health questions together and is conducted by the forty-nine national organizations making up the National Health Council. The program during the first day dealt with economic trends, atomic developments, the march of medical and social science, and changes in communications expected during the next few years and how these things will or can be made to affect people's health. Features of the second day were focused on particular health problems as they are met in the community. The part played in health by newspapers, magazines, television, and radio were discussed, as well as fluoridation of muncipal water supplies, the recommendations of the Commission on Chronic Illness, and reports of the Hoover and Kestnbaum Commission. Authoritative speakers in each field made the presentations outstanding.

Southeastern Hospital Conference. The Southeastern Hospital Conference of Dietitians will be held in Atlanta on April 20, 21, and 22. The conference will begin the afternoon of the twentieth with talks by Myrtle Morris on "The Master Menu and Related Administrative Controls" and by Edward Norman on "Techniques of Supervision." Thursday morning, April 21, A. F. Parrish will discuss "Sanitation and Housekeeping in the Dietary Department" followed by Dr. Donald E. Lundberg, whose subject will be "Forecasting and Labor Control." In the afternoon, a panel discussion on "Nutrition Education for the Hospital" will be presented. Dr. Joseph S. Scobba, Chief of Psychiatric Service, Grady Memorial Hospital, Atlanta, will close the conference on April 22 with a talk on "The Emotional Factors in Nutrition."

Dates to Remember. *National Hospital Week* in 1955 will be May 8 to 14. The theme this year will be "Your Hospital . . . A Tradition of Service." This celebration is traditionally built around the

341,000 CUSTOMERS SERVED...



only 186 broken cups

How much is chinaware breakage costing you? Would you like to cut your loss to less than ¼ of one per cent?

That's what the "Poodle Dog" Cafe in Tacoma, Washington has done, year after year, since they installed their Sani-Stack® Rack system. (In one year only 144 glasses were broken).

The Sani-Stack® system for dish, cup and glass handling not only saves thousands of dollars by reducing breakage, it also reduces noise and waste motion to a minimum, improves sanitation, saves labor, time and storage space.

If breakage is putting a big hole in your profits, send coupon for bulletin "Save Dollars With Sturdy Racks," and full information about the Sani-Stack® dish handling plan. They are FREE. Start cutting your china and glass breakage TODAY.

25 years of Service to the Food Service Industry — Sold Through better Restaurant Equipment Dealers Everywhere.

Metropolitan WIRE GOODS CORPORATION
70 Washington Street, Brooklyn, N. Y.

Please send FREE bulletin "Save Dollars With Sturdy Racks," and full information about the Sani-Stack Plan.

Name.....Title.....

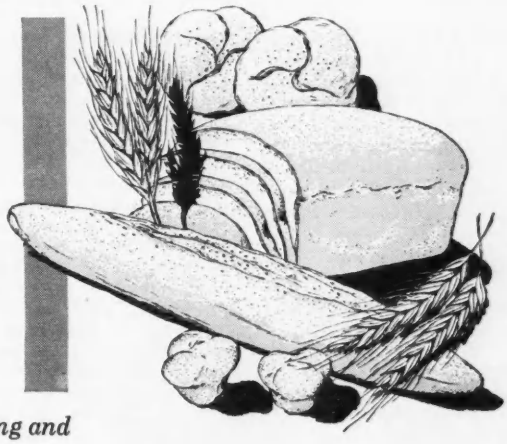
Address.....

City.....State.....

JADA

Advertisement

FLOUR FOR MAN'S BREAD*



A Brief History of Milling and Baking by SCIENCE WRITER

CHAPTER V. *The Evolution of Millstones*

FROM MORTAR TO SADDLESTONE

Early man learned that grain could be ground by pounding it with a stone pestle in a mortar. From this he advanced to rubbing the grain on a saddlestone with another stone called a metate which gave better results.

PUSH MILLS DEVELOP

Apparently from these saddlestones the push mill was developed. The surfaces of this type of mill were grooved and it was found that the shearing action was helped if the grooves were not parallel but crossed each other at acute angles. This discovery has been carried over to our day; the rollers of modern mills are so arranged for efficiency.

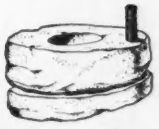
With better implements grinding speed increased. Then it was found that a steady supply of grain fed to the mill resulted in greater production. So the upper stone was hollowed and slotted to allow continuous feed.

LEVER MILLS ENTER

A logical development of the push mill was the lever mill which allowed its operator to exert the force of his entire body. It increased yields so greatly that it replaced saddlestones and push mills. In fact, the level mill was an industrial machine and caused far-reaching changes to occur in the milling of grains.

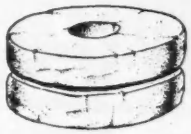
HOURGLASS MILLS & QUERNS

Next came Delian and hourglass mills. Probably these developed because the action of the lever mill in an arc suggested the greater efficiency of using a circular motion. The hourglass mill was more productive because the upper stone was suspended over the lower with both grinding surfaces running parallel.



Another development which used rotary motion was the quern which probably was developed for home grinding. In this device, too, the upper stone was suspended over the lower. As its design was refined, it gained an adjustment which allowed the grind to be changed.

FROM QUERN TO MILLSTONE



The step from quern to millstones as we know them followed logically because it was discovered that the freely-turning upper stone could be greatly increased in size and rotated on its axle by sources of much more power than could be exerted by men or animals.

MILLING AND NUTRITION IMPROVE STEADILY

Just as more efficient milling practices have developed over the years, so has our knowledge of good nutrition. Today millers and bakers restore to white bread and flour important values which are lost unavoidably during milling. They do this by the simple process of enriching their good foods with vitamins B_1, B_2, niacin, iron and, in some cases, calcium for better nutrition.

This is one of a series of articles which is being published in professional nutrition and dietetic journals, and which will be widely distributed for educational purposes. Reprints of this and all other chapters are available without charge. Write to the Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 286 St. Paul Street, West; Montreal, Quebec.

*This is the title of a definitive history of milling by John Storck and Walter Dorwin Teague, published by the University of Minnesota Press at Minneapolis and copyrighted by the University of Minnesota. It is used with permission as a source of material for this series of advertisements.

The next chapter titled: "Waterwheels and Millstones" will be published soon.

Enriched with vitamins and iron for better nutrition

Advertisement

May 12 birthday of Florence Nightingale. In 1921, the American Hospital Association started a National Hospital Day; it was expanded to a week, in 1953.

The 40th Anniversary Convention of the *Catholic Hospital Association of the United States and Canada* will be held in St. Louis, May 16 to 19, with a central theme of "The Road Ahead." Special sectional meetings on dietary service will be included in the program.

The *American Physical Therapy Association* will hold its 32nd Annual Conference in St. Louis, June 20 to 24.

July 11 to 29 are the dates for the *Annual Cerebral Palsy Workshop* to be held at the Iowa Hospital for Severely Handicapped Children, Iowa City.

Rice Recipes and Enrichment. Since rice is a staple food for many people who live in the Gulf and southern areas of the United States, the shortcomings of this product in those areas is very important. In 1949 the Food and Nutrition Board of the National Research Council issued a resolution urging the nutritional improvement of rice. Such improvement can be accomplished by: (a) adding certain vitamins and minerals to the milled white rice, (b) undermilling, or (c) by such additional processing, such as "parboiling" or "conversion." Rice treated in these ways contains more of the natural vitamins and minerals than ordinary rice. The South Carolina Agricultural Experiment Station, Clemson Agricultural College, has published Circular 95, February, 1955, which explains some of the data collected by the Food and Nutrition Board, and discusses how rice is enriched and why it should be enriched. Recipes, both large and small quantity, are included as well as a short history of rice and culinary practices connected with its use.

Movie on Rheumatic Fever. The U. S. Public Health Service has released a new, animated film titled "Stop Rheumatic Fever." Emphasis of the film is on the fact that rheumatic fever can now be prevented by treatment of "strep" infections. The new motion picture is part of a health education unit developed by the National Heart Institute and Heart Disease Control Program in cooperation with the American Heart Association. Other parts of the unit are a discussion guide for users of the film; a booklet, "Stop Rheumatic Fever," which is designed to serve as a companion piece to the film; and a folder, "Now You Can Protect Your Child."

The film, which is 16 mm. and runs about 12 min., is sold for a price of $15. It is being distributed from the American Heart Association Film Library, 13 East 37th Street, New York 16. Copies of the discussion guide, the booklet, and the folder accompany each print of the film which is purchased.

Nutrition for Teens. The American Institute of Baking has published a four-color booklet titled "Map Your Meals" for boys and girls of adolescent age. The purpose of the booklet is to give the teen-ager concise information about nutritional needs. Stress is laid on how foods give individuals pep, energy, and drive. To stimulate interest, the device of pretending that nutrition can be likened to travel is used. A teacher's guide, to help in the class use of the booklet, is also available.

Falsely Labeled Foods. The Food and Drug Administration in February reported the first seizure of a falsely labeled "low-sodium" food, since label regulations to protect users of such dietary items became effective last September. The food was canned spinach labeled as containing less than 50 mg. sodium per 100 gm. spinach. Analysis showed that the spinach contained substantially more sodium than the amount declared on the label. The regulations of the FDA were issued to protect those who must restrict their sodium intake because of certain heart conditions and for other medical reasons.

Other food seizures in January because of violation of the Food, Drug, and Cosmetic Act, removed approximately a million pounds of contaminated food from the market. About 427 tons of foods seized contained decomposed portions or filth. Three seizures were made of food products containing less vitamins than declared on their labels, and eleven of watered oysters.

Safe Tolerances for Pesticide Chemicals. On March 6 regulations for establishing safe tolerances for pesticide

Appetites Need Tempting?
Budgets Need Cutting?

LET MAGGI DO IT!

The meal-planner's best friend! . . . Anywhere meal-planning is a problem, Maggi's Granulated Bouillon and Maggi's Seasoning can be a big, BIG help.

Coaxes out hidden flavor! . . . Maggi's Seasoning is a highly concentrated cooking aid that multiplies and emphasizes the natural taste of food. Makes meats, casseroles, gravies, stews taste marvelous! Maggi's Granulated Bouillon Cubes dissolve instantly, add appetizing, meaty flavor.

Economical, easy to use! . . . Naturally, Maggi's cooking aids make low cost dishes taste better . . . transform leftovers into treats, all in a few seconds time! So keep these world-famous products—Maggi's Seasoning and Maggi's Granulated Bouillon Cubes—always on hand!

Let MAGGI aid in special diets too!

Maggi's Seasoning and Maggi's Granulated Bouillon Cubes are high in protein, low in calories. Extremely easy to digest . . . even more digestible than simple foods such as toast. (Not recommended for salt-free diets.)

FREE

VALUABLE FOOD PLANNING TIPS! Quantity recipes for delicious soups, stews, meat dishes!

THE NESTLE COMPANY, Inc.
2 William St., White Plains, N. Y.

Name .....
Address .....
City ..... Zone..... State.....

MAGGI'S® SEASONING — GRANULATED BOUILLON CUBES

PREFERRED

for TEA SERVICE

MANHATTAN

DETROIT

SAF-SPOUT

FRENCH

BUFFET

PITTSBURGH

PHILADELPHIA

CHICAGO

NEW YORK

BELLEVUE

BOSTON

Hall Teapots are available in sizes ranging from individual to banquet service.

Guest satisfaction reaches a new high . . . china replacement a new low . . . when the service is Hall China. Hall teapots, made of heavy fireproof china by an exclusive process, are crazeproof, absorption-proof, and stainproof. Spouts, lips, and handles are extra strong . . . shapes are balanced for easy pouring, designed for easy cleaning.

Write for Bulletin SM-1 which lists and illustrates Hall casseroles, baking dishes, coffee and teapots, creamers, jugs, ash trays, salads, and many other items available in 27 beautiful underglaze colors.

THE HALL CHINA COMPANY • EAST LIVERPOOL, OHIO

The World's Largest Manufacturer of Fireproof Cooking China

Spouts and bodies of Hall French Teapot are cast separately, assembled by hand, and permanently joined by the Hall process.

HALL
Secret Process
FIREPROOF CHINA

chemicals used on food crops went into effect. The regulations were issued under the new pesticide amendment to the Federal Food, Drug, and Cosmetic Act. Under this law, food shipments bearing residues of pesticide chemicals in excess of established tolerances will be contraband and subject to seizure as adulterated. In view of the urgency to establish tolerances for the many chemical pesticides now being used, the Food and Drug Administration is already receiving applications for these tolerances from pesticide chemical menufacturers. These petitions are being processed according to the terms of the tentative regulations which were published on October 20, 1954, and the FDA hopes to secure protection of the public under the new law with a minimum of litigation.

News of State Associations

Colorado Dietetic Association. The recipient of the Colorado Scholarship Award for 1955 is Elizabeth M. Graham of Seibert, Colorado. Miss Graham was graduated from Colorado A & M in June, 1954 and is interning at the University Hospital, Ohio State University, Columbus.

Hawaii Dietetic Association. Dr. Flemmie Kittrell, Professor of Home Economics, University of Baroda, India, was the guest speaker at the Hawaii Dietetic Association meeting on March 2. A leader of the home economics program, United States Operations Mission in New Delhi, Dr. Kittrell was in Hawaii directing twenty-three Indian women students studying with the Extension Division of the University of Hawaii. She spoke on how India is looking forward in the field of nutrition by having government-supported laboratories in hospital dietetics, food preservation, dairy industry, and agriculture colleges.

Stawant Brar and Bimla Bhatnagar, Indian home economists, demonstrated the making of *chappati* with Indian utensils and also the wearing of the sari.

Illinois Dietetic Association. On March 10 and 11, the Illinois Dietetic Association met in Chicago. The program included the following papers and speeches:

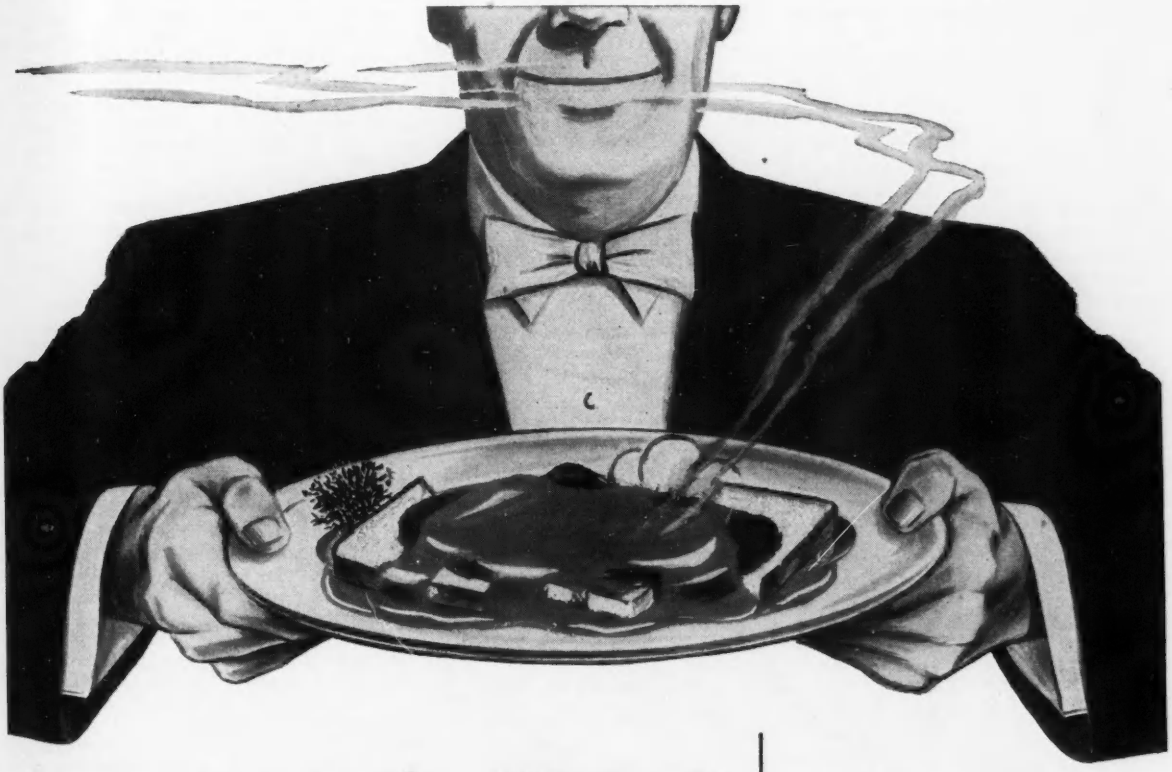
"Broad Horizons"—Helen LeBaron, Ph.D., Dean, School of Home Economics, Iowa State College, Ames
"Are You an Administrator?"—Karl S. Klicka, M.D., Director, Presbyterian Hospital, Chicago
"Keys to Success"—Eleanora Sense, Ed.D., Educational Dietitian, Wesley Memorial Hospital, Chicago
"Are You Ready for Advancement?"—Ray E. Brown, Superintendent, University of Chicago Clinics
"Working with People"—Malcolm Knowles, Administrative Coordinator, Adult Education Association, Chicago
"Role of the Therapeutic Dietitian"—Donald I. Bell, M.D., Evanston Hospital Association, Evanston, Illinois
"Opportunities for Cooperation in Selling the Dietetic Profession to the Community"—Laura Hughes Lunde, Secretary, Chicago Board of Health
"Cooperating with Civil Defense in Training for Emergency Mass Feeding"—Pearl Camstra, Chief, Nutrition Section, Chicago Board of Health
"Good Food Does Make a Difference"—Constance Hilton, Head Dietitian, Lutheran Hospital, Moline

A special feature of the program was the presentation of the annual award of I.D.A. to a 4-H Club member. This year's award went to Nancy Jalane Patrick of Macomb.

Oklahoma Dietetic Association. The Oklahoma Dietetic Association held its spring convention March 4 and 5 in Tulsa. Talks included at the meeting were:

"A Physician's View of Diet Therapy"—E. M. Schneider, M.D., Chief of Gastroenterology, VA Hospital, Oklahoma City
"How to Get Cooperation"—Vernon Sisney, M.D., Chief Psychologist, VA Hospital, Oklahoma City;
"Team Work in Allied Fields"—Albert Wade, Chief of Social Workers, VA Hospital, Oklahoma City
"Newer Trends in Medical Research"—Shirley Wells, Dietitian, Oklahoma Medical Research Foundation Hospital
"Checking Department Operations"—H. W. Esperson, Howarth and Howarth, Chicago

PRESCRIPTION...
℞ For reduced shrinkage losses
Controlled temperature of the roasting ovens
Pound for pound, you get more portions of better-tasting, more juicy, tenderer meats from a modern range equipped with a dependable Robertshaw® Oven Heat Control. Through proper use of your Robertshaw Control, you cut meat-shrinkage losses... improve the quality of the meals you serve.
Ask your equipment salesman...
Your Kitchen Appliance Salesman will gladly give you the full story of controlled heat—and the way it helps you save on fuel, food and labor while it helps you in the preparation of better tasting foods.
MR. CONTROLS
Robertshaw-Fulton
CONTROLS COMPANY
Robertshaw Thermostat Division, Youngwood, Pennsylvania
Robertshaw-Fulton Controls (Canada) Ltd., Toronto



Economy is the "Extra"

that you get with Custom Gravy Bases

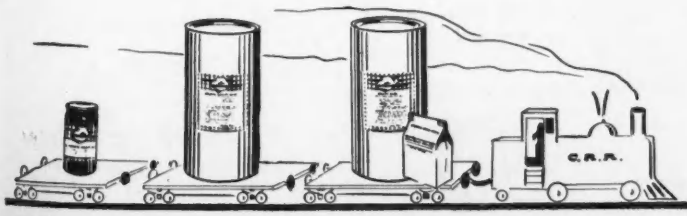
Custom Gravies are truly economical, of course, but economy is only the "extra" that you get when you insist on traditional Custom quality. Flavor is a *must* if a gravy base is to do a job for you.

Custom Gravy Bases give you delicious, uniform flavor every time. They are made in variety to meet the different desires of every user. Each one produces gravy that is smooth-textured, even in consistency and has a rich, appetizing color.

Ease of preparation is another *big* Custom advantage; use your most inexperienced kitchen help. To make any one of these wonderful gravies takes only a few minutes, and is a simple process, indeed. In addition Custom Gravy Bases help you to control your costs to the fraction of a penny. You make only the *exact* quantity you need.

Custom Gravy Bases are favorites from coast-to-coast.

To try Custom Gravy Base, write us asking to have your Custom Supplier call. He will gladly supply you with a sample and with interesting recipe suggestions.



Custom

FOOD PRODUCTS, INC.

Dept. AD-4 • 701 N. WESTERN AVENUE

CHICAGO 12, ILLINOIS

Pennsylvania Dietetic Association. The February meeting of the Philadelphia Dietetic Association was on "Recent Aspects in the Treatment of Diabetes Mellitus." Featured speaker was Dr. Henry F. Page, Lankenau Hospital, who gave highlights on the meeting of The American Diabetic Association. He stressed the strides that have taken place in the various types of insulin, as well as the discoveries for the use of insulin in relation to normal growth and the important part antibiotics play in reducing infection of the diabetic patient. A film on "Breast Self Examination" was also shown at the meeting with a brief explanatory talk by a member of The American Cancer Society.

Association Activities

Food Misinformation. The A.D.A. compilation, "Food Misinformation," has proved popular not only with members in their efforts to provide accurate nutrition information and dispel false ideas; it has been used by at least two other organizations in a similar effort.

In the February 1955 issue of *Redbook* magazine, the article "How Good Are Those 'Wonder Foods'?" by Morton Sontheimer included a questionnaire on food misconceptions. The questions selected were taken from the A.D.A. compilation. Earlier, in the March 31, 1954 issue of the *Journal of Agricultural and Food Chemistry*, the A.D.A. compilation was partially reprinted in an article, "Food Fads and Fancies—A Health Problem" by Horace L. Sipple and Charles Glen King. Single copies of the reprints of this latter article are available free from the A.D.A. office. The complete compilation is also available for 25 cents per copy.

State Dietetic Meeting. A.D.A. representatives will attend the following state dietetic association meetings:

April 29–30—Geraldine Piper, Indiana Dietetic Association, Indianapolis
May 3—Martha Nelson Lewis, Connecticut Dietetic Association, New Haven
May 12–13—Beatrice Donaldson, Minnesota Dietetic Association, Minneapolis
May 16—Jane Hartman, Delaware Dietetic Association, Kent

References Available. The nine articles in the series, "Dietary Consultation—A Service for Small Institutions," which appeared originally in this JOURNAL may now be ordered in booklet form at a cost of $1.00 a copy. Subjects covered include: menu planning, food preparation, storage, waste, sanitation, planning layout and equipment, training personnel, and other related topics. A comprehensive bibliography is incorporated in each chapter.

The *Hospital Food Service Manual*, prepared by the Joint Committee of A.H.A.—A.D.A. may be ordered for $6.00 from the American Hospital Association. This is a "must" in your library. A review of this book appeared in January 1955 issue of the JOURNAL.

The revised "Nutrition Bibliography" is a most helpful reference for dietitians, nutritionists, and allied workers. Of special interest are the newly compiled sections on "Selected List of Films on Nutrition" (15 cents) and the "Consultation Service to Institutions" (25 cents) which may be ordered from the A.D.A. office.

Dietitians Contribute. Dr. Margaret A. Ohlson, A.D.A.'s official representative at the Michigan State College symposium on "Nutrition of Plants, Animals, and Man", held February 14 to 16, 1955 at East Lansing, has indicated the outstanding contributions made by several A.D.A. members during this meeting. Dr. E. Neige Todhunter, University of Alabama, discussed "Human Nutrition—Past and Present." Dr. Dena Cederquist, Michigan State College, spoke on "Nutritive Value of Milk in Rat Feeding Tests." Dean Marie Dye, Michigan State College, acted as Chairman of a discussion on "Human Nutrition," and Alice H. Smith, Michigan Department of Health, moderated at a panel on "Soil—Plant—Animal—Human Relationships."

News of Products and Services

The *American Cutlery Manufacturers Association* has published a booklet

Good News for dieters!

save 20 calories per cookie*
simply by using SUCARYL®

Believe it or not, a *good* 34-calorie cookie! Easy to make, wonderfully sweet—a perfect boost for a despairing dieter's morale. The trick's in the recipe: Instead of sugar, you use SUCARYL® (Cyclamate, Abbott), the new non-caloric sweetener. SUCARYL bakes right in, won't turn bitter or lose its sweetness—in *any* food, at *any* temperature. Try it today, for sure! Abbott

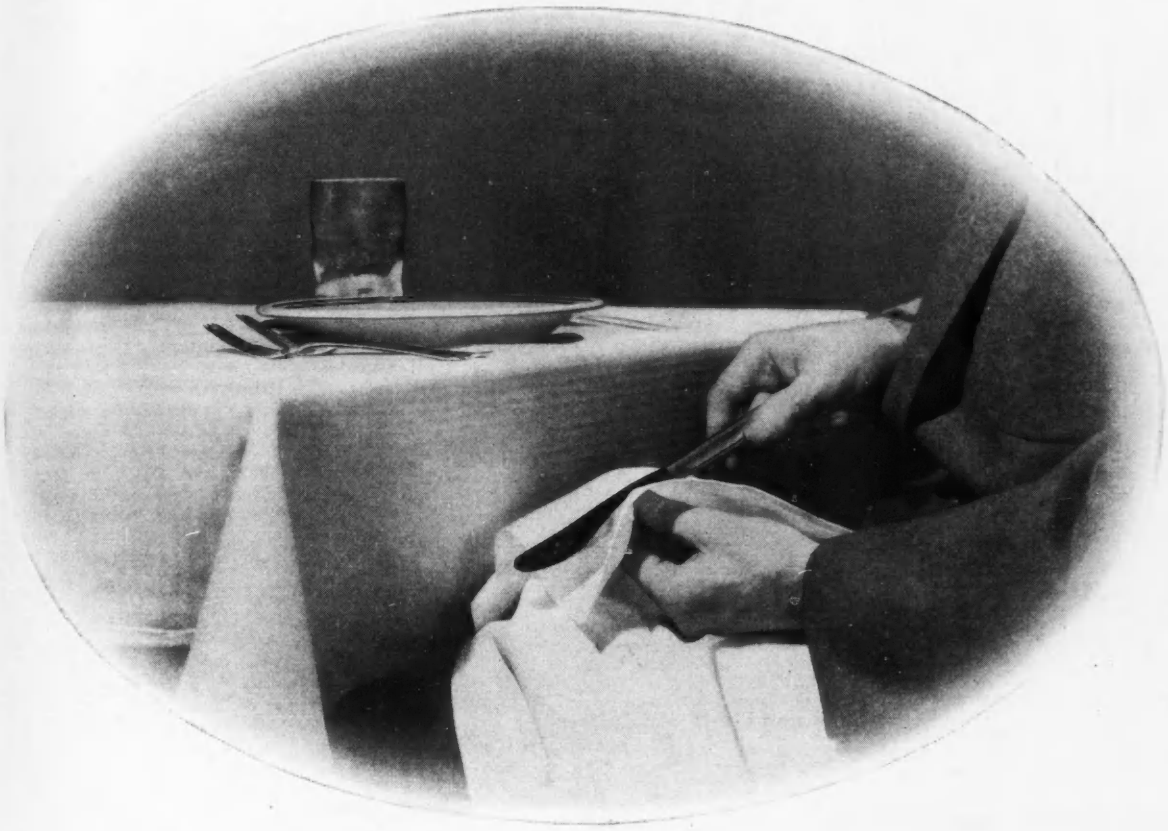
LOW CALORIE PEANUT BUTTER COOKIES

2 teaspoons SUCARYL Solution or 16 tablets, well crushed
1 tablespoon butter or margarine, melted and cooled
½ cup peanut butter
2 eggs, slightly beaten
1 cup sifted enriched flour
½ cup skim milk
¼ teaspoon baking soda

Add SUCARYL to melted shortening; add peanut butter; blend well. Add eggs; blend again. Add flour alternately with milk to which the baking soda has been added; blend well after each addition. Drop cookies on ungreased cookie sheet by heaping teaspoons. Bake in moderate oven, 375° F., 15 minutes. Makes 40 cookies.
*54 calories if made with sugar (34 with SUCARYL)

FREE SUCARYL RECIPE BOOKLET
—*at Pharmacies everywhere!*

504114



"Sorry Sir, our Diversey Rinsemaster hasn't been delivered yet"

Hand toweling has always been the only sure way to dry dishes without water-spotting. But now Diversey's new ZEROSPOT-RINSEMASTER system *air-dries* your best china, glassware and silver *without any trace of dingy water spots.*

ZEROSPOT is an *entirely different* compound which is automatically added to the final hot rinse of your dishwashing machine by Diversey's compact, electronically controlled RINSEMASTER unit. Each surge of final rinse water carries with it the precise amount of ZEROSPOT needed to insure rapid, spot-free, air-drying *without toweling.*

The cost is remarkably low. The money you save by eliminating hand-toweling will pay for the unit in a few weeks. It costs you nothing for full information, so why not write today for full details.

THE DIVERSEY CORPORATION
1820 Roscoe Street, Chicago 13, Illinois
In Canada: The Diversey Corporation (Canada) Ltd., Port Credit, Ont.

Making sanitation a science

Balancing acts are for the seals! The AMF Lowerator Dispenser System automatically dispenses dishes at ideal service level—stores planned quantities in otherwise wasted space. Increases efficiency—reduces china breakage, too. For full details write AMF LOWERATOR DIVISION, 261 Madison Ave., New York 16, N. Y.

Simplify Service
Eliminate Errors
with
AATELL & JONES
DIET CARDS

- HOLIDAY ITEMS
- PRINTED NAPKINS
- TRAY COVERS

Trays are easy to identify with these convenient 2¼" x 1¾" Diet Cards. Ten standard diet subjects available, each on a different colored sturdy stock. Space allowed for patient's name, room and special notes. Write for samples and prices.

Aatell & Jones, Inc.
3360 FRANKFORD AVENUE
PHILADELPHIA 34
PENNA.

Low Sodium Diet?
Use the best-tasting Salt Substitute ever made

- Really seasons like salt...
- Sprinkles like salt...
- Retains salt flavor in cooking

AT YOUR GROCERS

Ask your doctor about:
Adolph's SALT SUBSTITUTE
©Adolph's Ltd., Los Angeles 46, Calif.

titled "Cutlery—Its Professional Uses." The booklet is designed to help the institutional buyer in choosing the equipment needed. It gives the history of cutlery and describes the different parts of a knife and the different types of grinds used in making knives. The care of cutlery to insure its most effective use and long life is also covered. Special sections discuss "Cutlery for Meat Preparation," and "Cutlery Designed for the Institutional Kitchen," in which thirty different cutlery pieces and their uses are illustrated. The booklet concludes with a short discussion on table flatware. The Association has also prepared a two-fold leaflet which illustrates and briefly discusses both fixed-blade knives and folding pocket and sportsmen's knives. The booklet sells for 25 cents a copy from the Association, Deerfield, Massachusetts. The folder is distributed free.

Durkee Famous Foods has introduced an all-purpose oil which can be used for baking, cooking, and frying, and also as a base for salad dressing. The oil is packed in 5-gal. cans equipped with non-drip pouring spouts. Called APO, the oil is a super-refined cottonseed oil which has no oily taste or odor and does not transfer flavors from food to food in frying. It is also designed to remain cold-resistant four or five times as long as ordinary salad oils, thus insuring that salad dressings will remain blended under refrigeration.

Pfaelzer Brothers has now added veal cutlets to its line of foods. The cutlets are chop shape, lightly and evenly breaded, and can be prepared from the fresh-frozen state. They are layer-packed in 10 lb. cartons, and are available four, five, or six to the pound. Cost for a 4-oz. cutlet is 19 cents. Cutlets are also obtainable in non-breaded form for use as low-cost veal swiss steak or veal steak sandwiches.

Hoffmann-La Roche Inc. has published a brochure on *Enriched Macaroni*. The brochure should serve as a source book of background information on macaroni and macaroni products and their enrichment. The booklet contains sections on the history of the product, its composition, different types, its place in the American diet, methods of enrichment, and its use in therapeutic diets. A colorful chart illustrates the versatility of macaroni and spaghetti with pictures and six recipes.

Swift & Company has announced that it is giving up exclusive rights to a patent for a special meat-base formula for babies allergic to milk. The formula contains proper proportions of strained meat, lard, mineral salts to supply calcium and phosphorus, and certain carbohydrates, such as sugar, salt, and water. It resembles the composition of milk, is thoroughly digestible, and has an agreeable flavor and aroma. The company believes that by turning over the patent to the public, further research can be done and the use of the product encouraged. Although the product was designed to be commercially produced, it can also be prepared in the home or hospital from strained meats and other ingredients readily obtained in grocery and drug stores.